

Review of the African genus *Digentia* Stål, 1878 (Orthoptera, Acrididae, Oxyinae)

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Abstract

The genus *Digentia* Stål, 1878 currently has four described species from the tropical forest areas of West Central Africa. Here, we describe a new species, *Digentia viridissima* sp. nov., and its natural habitat in the swamps of the humid forests of southern Cameroon. Additionally, we include a description of *Digentia punctatissima* (Stål, 1875) and redescrptions of *Digentia rufogeniculata* (Bolívar, 1911), *Digentia fasciata* Ramme 1929, and *Digentia karnyi* Ramme 1929. We also provide a key to identify the species of the genus.

Keywords

Caelifera, grasshopper, taxonomy, new species, tropical forest

Introduction

Digentia Stål, 1878 is an African genus belonging to the subfamily Oxyinae Brunner von Wattenwyl, 1893. The subfamily is recognized by the subconical head, short fastigium of vertex, sulcate frontal ridge, conical prosternal process, open mesosternal interspace, lower genicular lobe of the hind femur produced into a spine, distal sternites of the abdomen with tufts of short hairs, and male epiphallus almost always with a divided bridge (Hollis 1975). The Oxyinae currently contains 37 recognized genera. Nineteen of these genera are classified by the OSF (Cigliano et al. 2023) into two tribes: fifteen genera in the Oxyini Brunner von Wattenwyl, 1893 and four other genera in the Australian Praxibulini Rehn, 1957. The genus *Digentia*, and seventeen other wet-forest genera of similar habitus from Africa (*Badistica* Karsch, 1891, *Caryanda* Stål, 1878, *Cylindrotiltus* Ramme, 1929, *Gerista* Bolívar, 1905, *Pterotiltus* Karsch, 1893, *Parapterotiltus* Oumarou-Ngoute & Rowell, 2024) and from Asia (*Boninoxia* Ishikawa, 2011, *Caryandoides* Zheng & Xie, 2007, *Chitaura* Bolívar, 1918, *Dirshia* Brown, 1962, *Fer* Bolívar, 1918, *Hygracris* Uvarov, 1921, *Longchuanacris* Zheng & Fu, 1989, *Ochlandriphaga* Henry, 1933, *Oxycrobilus* Ingrisch, 1989, *Oxytauchira* Ramme, 1941, *Paratoacris* Li & Jin, 1984, and *Pseudogerunda* Bey-Bienko, 1935)

are currently excluded from both tribes of Oxyinae (Cigliano et al. 2024). However, in its morphology and distribution, *Digentia* seems to be close to *Oxya* Serville, 1831, the type genus of the Oxyini tribe. Both genera have, for example, a pentagonal fastigium rounded when seen from above, wider than long, with or without a weak median longitudinal carinula, complete lateral facial keels, and prosternal process with subacute or rounded apex (Hollis 1975). *Digentia* is confined to West Central Africa, while *Oxya* species are found throughout the old world tropics and warm temperate zones.

The genus *Digentia* currently has four known species: *Digentia punctatissima* (Stål, 1875), *Digentia rufogeniculata* (Bolívar, 1911), *Digentia fasciata* Ramme 1929, and *Digentia karnyi* Ramme 1929. *D. rufogeniculata* and *D. karnyi* are known from the Democratic Republic of Congo (Bolívar 1911 and Ramme 1929). In the original description of *D. punctatissima*, Stål (1875) gives “Africa occidentalis” as provenance. *D. fasciata* is currently the only species recorded from Cameroon (localities Lolodorf and Yaounde (Ramme 1929)). We describe here a new species of the genus from Ngoyla and Ngutadjap in the humid forests of southern Cameroon, *Digentia viridissima* sp. nov. We further describe *D. punctatissima*, redescrcribe *D. rufogeniculata*, *D. fasciata*, and *D. karnyi*, and provide a key for species identification.

Materials and methods

Field sites.—Collections were made between 27 April 2019 and 07 April 2023 by Oumarou-Ngoute in the rainforests of two localities in the south Cameroon plateau: Ngoyla (in Nki National Park) in the division of Haut-Nyong, and Ngutadjap in the division of Vallée du Ntem (Fig. 1).

Morphological study.—Specimens of *Digentia* spp. were studied using a Wild stereo microscope. Drawings were made under 6–50× magnification using the same microscope with a drawing tube and refined in Photoshop (Adobe Corp.). Macrophotographs were taken with a Wild M400 macroskop and a Motic S600 camera. Other photographs were made in the field with a Canon IXUS camera

and in the laboratory with a Nikon D90 camera. Using conventional techniques, the phalli were extracted from relaxed specimens, macerated in 8% KOH, manually cleaned, neutralized in dilute acetic acid, and stained in acid fuchsin (Oumarou-Ngoute and Rowell 2024). The terminology used for genitalia description is that of Hollis (1971, 1975).

Measurements.—Measurements were made under the microscope using a graticule eyepiece and a digital stage (Mitutoyo) reading to 0.01 mm. The following measurements were made: P, length of the pronotum in the midline; L, overall length from the tip of the fastigium to the most posterior part of the abdomen measured in lateral view; Ant, length of antenna from the scape to the tip of antenna; IOS, inter-ocular space measured dorsally; E-E, total ocular width measured dorsally; EL, maximum length of elytron; F, maximum length of the hind femur; FD, depth of hind femur measured as the distance between the two lines drawn parallel to the long axis of the femur and touching the dorsal and ventral extremities of the femur; Ta1, Ta2, Ta3, lengths of each of the three hind tarsal segments; Sp Ext, number of external spines on the hind tibia; Sp Int, number of internal spines on the hind tibia. Measurements and ratios are given as the range and average of individual measurements and are also presented after normalization [obtained by dividing the measured value by P (the length of the pronotum)]. The normalized values allow comparison of species of different sizes. The foot formula shows the relative lengths of the three tarsal segments within the total length of the foot and again allows for comparison between different species. The foot formula values and the ratios describing sexual dimorphism (i.e., male/female) were calculated from the average values of the sample and not from individual measurements.

Number of specimens examined/measured.—*Digentia rufogeniculata* (Bolívar, 1911), 9 specimens: 1 female holotype, and 8 non-type specimens (4 males and 4 females) from the RMCA; *Digentia karnyi* Ramme 1929, 1 female holotype; *Digentia fasciata* Ramme 1929, 07 specimens: 3 females and 4 males, from the personal collections of the present authors; *Digentia viridissima* sp. nov., 23 specimens: nine (09) females and fourteen (14) males from the personal collections of the present authors. We tried, unsuccessfully, to borrow the holotype of *Digentia punctatissima* (Stål, 1875) from the Stockholm Museum (NHRS); thus, for this species, we examined the text and drawings from Stål 1875, Bolívar 1905, Ramme 1929, Hollis 1975, and Daniel Otte's photograph of the habitus of the holotype (in Cigliano et al. 2023). Dirsh (1970) says about *D. punctatissima*, "The type is in bad state of preservation having been preserved in fluid and then pinned. As a result, the redescription of it may be wrong in some respects. Fresh specimens are not available."

Abbreviation of depositories.—

RMCA	Belgium: Tervuren, Royal Museum of Central Africa
MfN	Germany: Berlin, Museum für Naturkunde
NHRS	Sweden: Stockholm, Naturhistoriska riksmuseet
ONC	Personal collection of C. Oumarou-Ngoute
RC	Personal collection of C.H.F. Rowell

Taxonomy

Order ORTHOPTERA Olivier, 1789
Superfamily ACRIDOIDEA MacLeay, 1821

Family ACRIDIDAE MacLeay, 1821
Subfamily OXYINAE Brunner von Wattenwyl, 1893

Genus *Digentia* Stål, 1878

= *Genditia* Bolívar, 1911 (syn. Hollis, 1975).
= *Oxya punctatissima* Stål, 1875 (syn. Bolívar, 1905)

Type species.—*Digentia punctatissima* (Stål, 1875) (NHRS Stockholm).

Subsequent literature.—Stål 1875: 5: 47; Bolívar 1905: 1: 229; Bolívar 1911: 55: 301; Bolívar 1918: 34: 23; Ramme 1929: 15: 323; Dirsh 1952: 46: 268; Johnston 1956: 256; Kevan 1956: 18: 960; Jago 1964: 8: 190; Dirsh 1965: 237; Dirsh 1970: 120–122; Johnston 1968: 174; Hollis 1975: 31: 223; Otte 1995: 4: 129; Yin et al. 1996: 235; Mestre and Chiffaud 2006: 122.

Revised description of the genus.—Our description differs somewhat from that of Hollis (1975) who wrote, "epiphallus with incompletely divided bridge and without ancorae." Our specimens of *Digentia fasciata* and *Digentia viridissima* sp. nov. have undivided bridges.

Head conical; fastigium rounded and pentagonal from above, wider than long, with or without median longitudinal carinula; frontal ridge sulcate, complete to clypeus; lateral facial keels complete. Eyes moderately bulbous. Antenna longer than combined lengths of head and pronotum. Prosternal process simple, conical with subacute apex. Dorsum of pronotum rugulose and coarsely pitted, rounded or weakly flattened; medial carina weak, lateral carinae absent; mesosternal interspace about as wide as long; disc of pronotum crossed by three deep transverse sulci, the space between sulci 2 and 3 narrower or slightly wider than metazona; posterior margin of metazona rounded slightly or not at all, notched in the midline (Fig. 5A, B) or concave and notched in the midline (Fig. 5C, D). Tegmina and hind wings very reduced, the former being either minute and not extending beyond mesonotum or scale-like and extending to the first abdominal tergite. All known species are either brachypterous or severely brachypterous. Lower genicular lobe of hind femur spined; hind tibia weakly or moderately expanded in apical part and with acute dorsal margins apically; external apical spine of hind tibia present. In male hind margin of 10th abdominal tergite with a weak furcula, or if without, then margin expanded dorso-laterally to form upturned lobes.

Phallic complex. Epiphallus with bridge incompletely divided or undivided, without ancorae but with well-developed anterior processes. Outer lophi long and tapering, the tips curved; inner lophi shorter, lobiform; "oval" sclerites present, roughly oblong in shape. Unitary ventrolateral sclerite present, extending around the ventral surface of the phallus in the ectophallic membrane, the ends terminating near the proximal ends of the cingular apodemes. Cingular apodemes and zygoma formed in part as sclerotizations in the ectophallic membrane. Rami of cingulum well developed, encircling the endophallus, meeting but not fused together in the ventral midline. Posterior edge of zygoma fused with arch sclerite forming a saddle-shaped valvular plate (Hollis 1971) with an upturned posterior margin. Endophallus with divergent apodemes proximally, gonopore process robust and bar shaped; long flexures at the distal end of the endophallic plates, ending in rounded endophallic processes that are attached to the robust ventral aedeagal sclerites that form the apical valves. Female ovipositor valves long, slender, smooth or evenly and weakly serrate in apical half.

Digentia punctatissima (Stål, 1875)

Figs 1–3, 6A, 10E

= *Oxya punctatissima* Stål, 1875 (syn. Bolívar, 1905)

Type material.—Holotype: ♂; Africa, West-Central Tropical Africa; NHRS Stockholm.

Material examined.—We studied the existing documents and images of the species: the original description of *Oxya punctatissima* by Stål 1875, and that of *Digentia punctatissima* by Ramme 1929; Daniel Otte's photograph of the holotype (Fig. 2) (from Cigliano et al. 2023), and the epiphallus of the holotype drawn (Fig. 3) by Hollis (Hollis 1975 figured the epiphalli of *D. punctatissima* and *D. rufogeniculata* but did not describe them).

Description.—(derived from Stål 1875 and Ramme 1929). Male and female: Body of medium size (L: male = 18.6 mm, female = 23.8 mm); fastigium about as long as wide, trapezoid in front; antennae broken. Pronotal disc, metanotum, and abdominal terga, especially the basal ones, finely rugose, pronotal lobes very shiny; prozona of the pronotum somewhat inflated upwards; hind tibia with tipped spines. Posterior margins of the tenth abdominal tergite produced laterally into lobes and curved upwards (see fig. 39 of Ramme 1929, our Fig. 10A); supra-anal plate apically somewhat produced, tongue

shaped, with a weak basal longitudinal furrow; cerci flat or compressed, wide, finely rugose, ventrally produced and pointed, dorsally with a sharp corner (see fig. 39 of Ramme 1929, our Fig. 10A, E).

Phallic complex. Epiphallus (fig. 3, from Hollis 1975) with wide bridge, slightly but incompletely divided medially, anterior margin incurved, posterior margin straight; a pair of large subconical outer lophi with tip rounded and curved upward and characteristic wide medial furrow; inner lophi weak, lobiform; anterior processes strongly developed and incurved.

Coloration. The coloration of the female (fig. 2. Daniel Otte's photograph, in Cigliano et al. 2023) is based on a specimen that is nearly 200 years old; all other species of the genus are basically green, suggesting that *D. punctatissima* was also. Antennae (broken) black; frons and genae yellow-brown, the former tinted olive above the clypeus; shiny black band behind the eyes that runs over the pronotal lobes then narrowing over the thoracic pleura and the first 2/3 of the abdominal tergites; the yellow-brown part of the genae continues rearwards over the pronotal lobes but is interrupted by a triangular black mark that joins dorsally with the pronotal black band (Fig. 6A); rear of head dirty olive-green. Pronotal lobes very shiny; pronotal disc, metanotum, thoracic pleura, and abdominal tergites dirty olive-green. Sulci on pronotal disc black, on the lobes, only the middle sulcus is filled with black; small dark yellow spot at the front of the black band across the lobes. Underside of thorax and abdomen dark red; front and middle legs

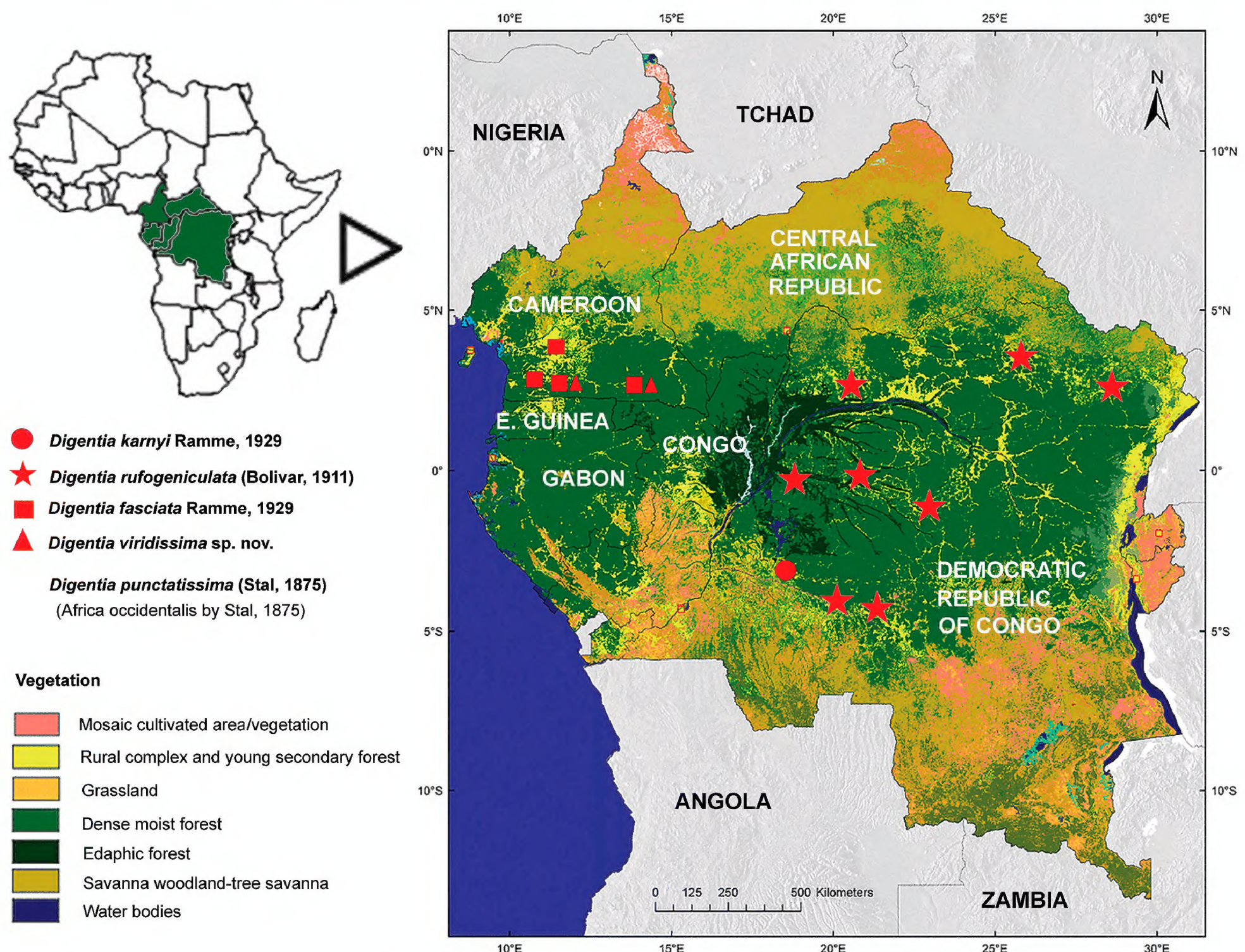


Fig. 1. Distribution of the *Digentia* species (vegetation map from Verhegghen et al. 2012). The collection locality of *Digentia punctatissima* (Stål, 1875) is unknown.



Fig. 2. Habitus of *Digentia punctatissima*. Daniel Otte's photograph of the holotype in the Orthoptera Species File, Cigliano et al. (2023).

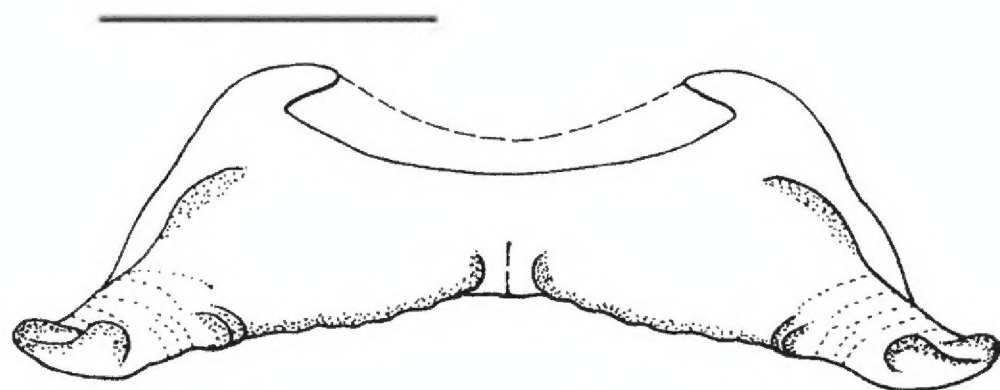


Fig. 3. Epiphallus of *Digentia punctatissima* (Hollis 1975). Scale bar: 1 mm.

dirty olive, yellowish basally; hind femur dark olive, ventral carina yellowish, knee region black, hind tibia blackish-olive with dirty yellow, black spines; hind tarsi light-brown.

Dimensions. P: male = 4 mm, female = 5.6 mm; L: male = 18.6 mm, female = 23.8 mm; F: male = 12.2 mm, female = 16.2 mm; EL: male = 10.8 mm, female = 14.1 mm (from Ramme 1929).

Distribution.—In the original description of *D. punctatissima*, Stål (1875) gives “Africa occidentalis” as provenance. Cigliano et al. (2023) shows a distribution map that seems to indicate that the species is found in Equatorial Guinea, DR Congo, Congo Republic, Central African Republic, Gabon, and Cameroon, but gives no specific localities or references. Johnston (1956) also cites Equatorial Guinea and DR Congo without specific localities. The Equatorial Guinea locality is from Ramme's 1929 description of the male allotype: Rio San Benito, Rio Muni. We know of no Cameroonian specimen (Fig. 1).

***Digentia rufogeniculata* (Bolívar, 1911)**

Figs 1, 4A–E, 5B, 7B, 8C, 9A, D, 10A, D, 11A–I, 12A, D, 13B, Table 1

= *Genditia rufogeniculata* Bolívar, 1911 (syn. Hollis, 1975)

Type material.—Holotype: DEMOCRATIC REPUBLIC OF CONGO • ♀; Africa, West-Central Tropical Africa, Zaire; Le Marinel leg.; MRAC Tervuren KMMA; RMCA ENT 000045089 – 400D. [examined].

Additional material examined.—8 (4 ♂ and 4 ♀) non-type specimens, caught subsequent to the original description (Fig. 4). ♂, Fandria, DEMOCRATIC REPUBLIC OF CONGO, specimen N° 6852H, R.P. Hulstaert leg., RMCA; ♂, Ubangi Binga, DEMOCRATIC REPUBLIC OF CONGO, specimen N° 6853, Dr J. Brédo leg., RMCA; ♂, Bumbuli, DEMOCRATIC REPUBLIC OF CONGO, specimen N° 1635CC, Dr J. Brédo leg., RMCA; ♂, Equateur: Bokuma, DEMOCRATIC REPUB-

LIC OF CONGO, specimen N° 6852M, R.P. Hulstaert leg., RMCA; ♀, Oshwe, DEMOCRATIC REPUBLIC OF CONGO, specimen N° 1635A, Dr J. Maes leg., RMCA; ♀, Oshwe, DEMOCRATIC REPUBLIC OF CONGO, specimen N° 1635U, Dr J. Maes leg., RMCA; ♀, Mondombe, DEMOCRATIC REPUBLIC OF CONGO, specimen N° X1912, R. Mayné leg., RMCA; ♀, Bambesa, DEMOCRATIC REPUBLIC OF CONGO, specimen N° VIII1934, Dr J. Brédo leg., RMCA.

Redescription.—The previous descriptions (Bolívar 1911 and Ramme 1929) of the species are noticeably short and mainly based on coloration. We provide here a more detailed description.

Male. Body of medium size (average L = 23.56 mm; Table 1), integument shiny, smooth on genae, head dorsally slightly rugose; pronotum, tergites of mesothorax, metathorax, and the first abdominal tergites rugose.

Head. Head thick; antennae filiform, longer than head and pronotum together (average Ant/P = 2.61); fastigium of vertex short, about twice as wide as long, pentagonal, slightly concave and rugose, frontal ridge well developed; eyes oval, protuberant; interocular space (average IOS = 0.71 mm) slightly wider than antennae scape with weak medial furrow.

Thorax. Pronotum cylindrical, lateral and medial carinae absent; midline of the disc crossed by three deep transverse sulci, the space between sulci 2 and 3 narrower than metazona; metazona short, about one-half of the length of prozona; anterior and posterior margin of pronotum rounded very slightly or not at all notched in the midline (Fig. 5B); prosternal process long, thin, and pointed; mesosternal space about 2 times longer than wide, lobe rounded; metasternal space open, wider than the half width of the mesosternal space. Tegmina reaching or exceeding the anterior margin of the first abdominal segment, the base not narrowed, apex rounded, strongly veined with reticulation, coarsely areolate (Fig. 7B); hind femur slightly robust; lower genicular lobe pointed; hind tibia wide apically (Fig. 8C), eight to nine external tibial spines, external apical spine of the tibia present, nine to ten internal tibial spines (Table 1); internal spurs larger than external spurs.

Abdomen. Tympanum wide, oval; the tip of abdomen curved upward; last abdominal tergite divided in the midline (Fig. 9D), furcula blunt, with rounded and slightly upwardly inflated margins either side of the midline; supra-anal plate triangular in dorsal view, somewhat elongated distally, with a rounded tip; medial longitudinal groove proximal, bounded posteriorly by transverse ridge that extends across the width of the plate; cercus flat, compressed laterally, inwardly curved, apically forked, longer than the supra-anal plate (Figs 9A, D, 10D); subgenital plate conical with rounded upwardly directed apex.

Phallic complex. Phallic complex (Fig. 11A, B) of medium size. Epiphallus quite robust, bridge wide, not divided, anterior margin and posterior margin convex; a pair of conical and upwardly curved outer lophi, tips acute and slightly incurved; inner lophi weak, lobiform; anterior processes robust, not incurved; oval sclerite wide, subconical (Fig. 11C–G). Endophallus slender; cingular apodemes in ectophallus slender, elongated with rounded apex, rami rounded not fused ventrally; ventrolateral sclerite laterally flat, tapered towards the tips ventrally, somewhat triangular; valvular plate with three lobes; ventral aedeagal sclerite slender, short with rounded apex; endophallus apodeme wide, lobiform; gonopore process elongated with slightly wide and rounded apex (Fig. 11H, I).

Female. In general, similar to the male. Female particularities: medium size (average L = 26.53 mm). Tip of abdomen only slightly or not at all curved upwards; last abdominal tergite very slightly or not at all inflated into lobes; supra-anal plate triangular with

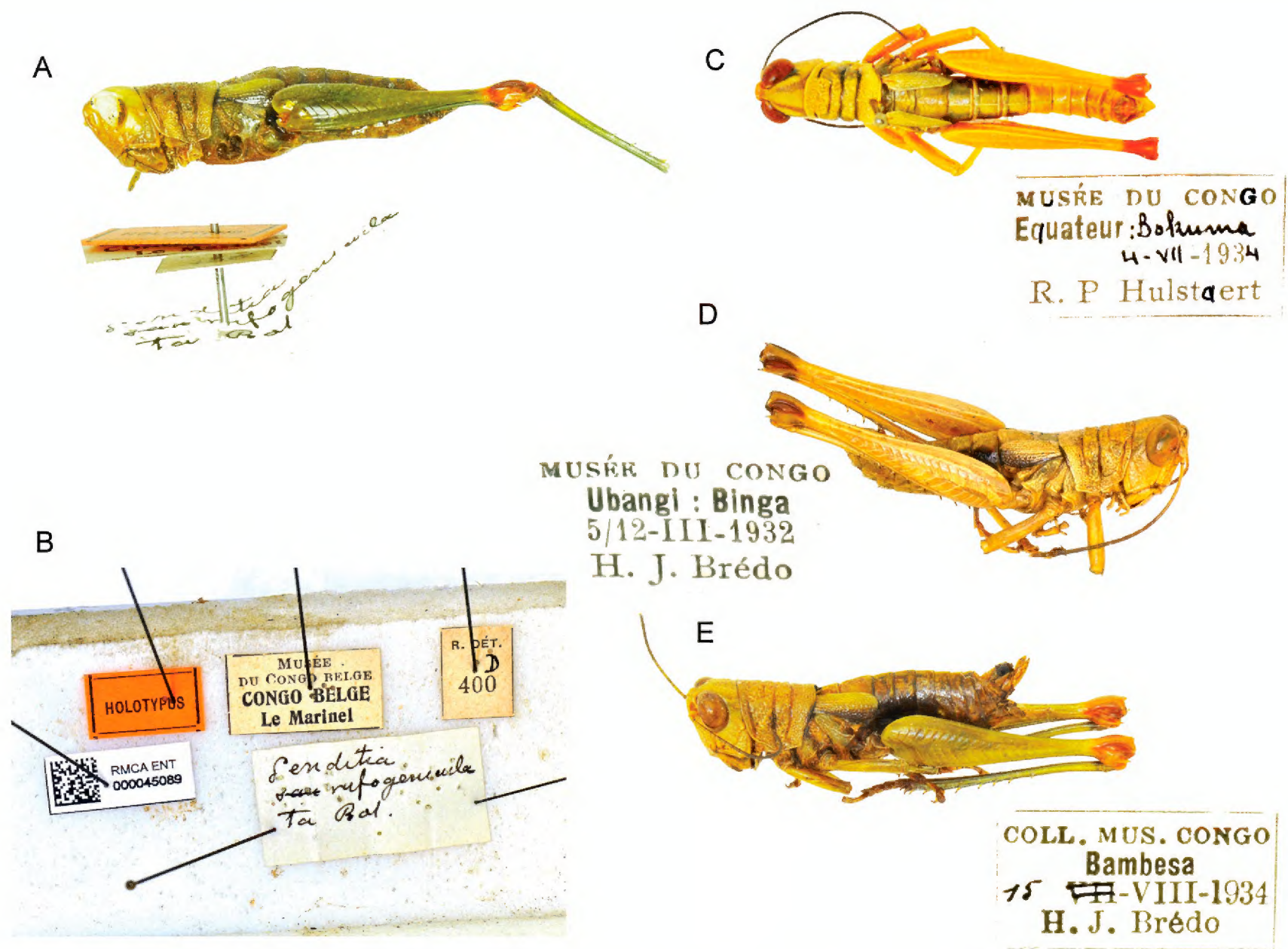


Fig. 4. Some studied specimens of *Digentia rufogeniculata*. A. Holotype, female, lateral view; B. Holotype's labels; C. Non-type, male, dorsal view; D. Non-type, male, lateral view; E. Non-type, female, lateral view.

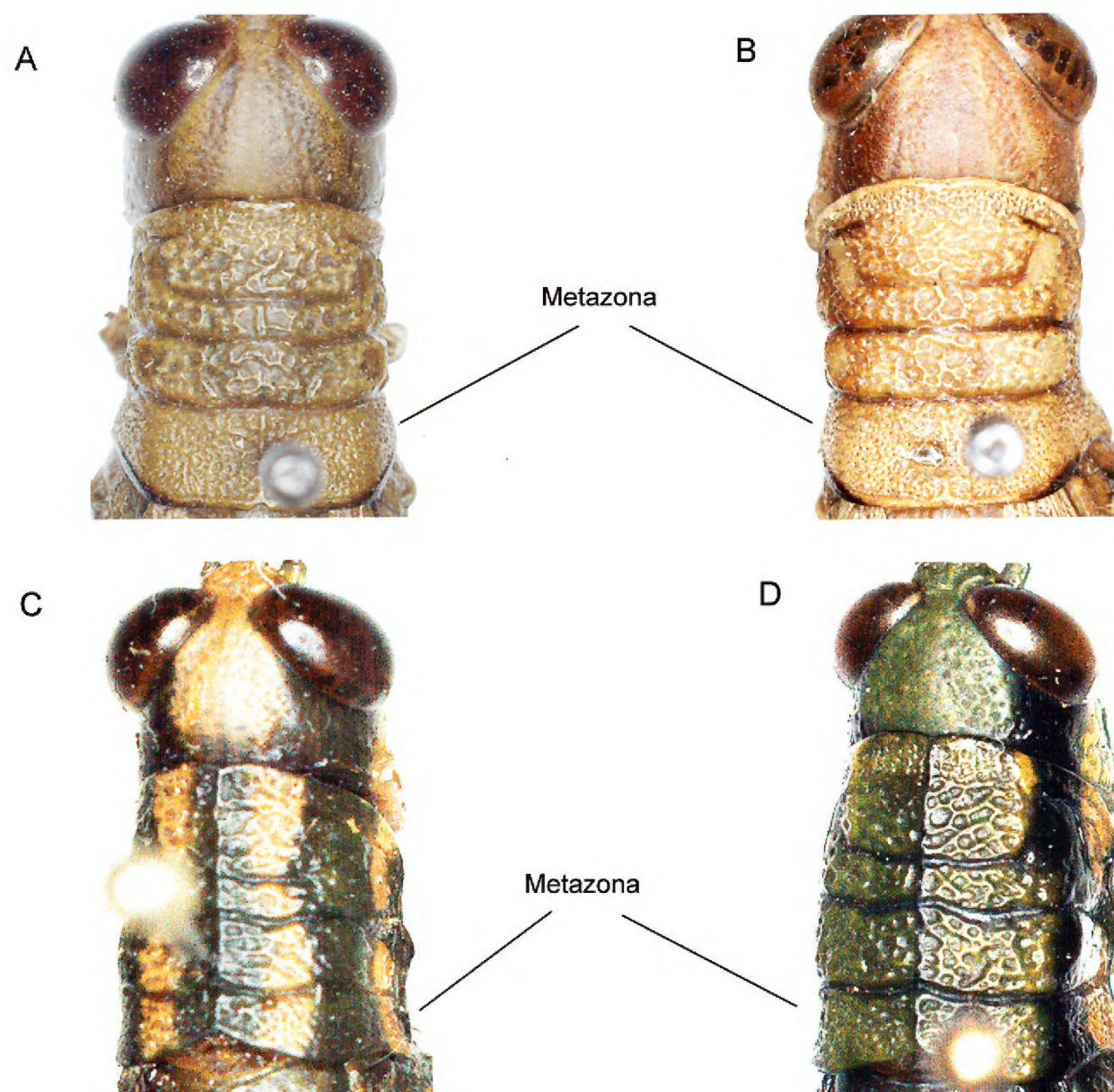


Fig. 5. Pronotum, dorsal view, of the *Digentia* species showing sulci. A. *Digentia karnyi*; B. *Digentia rufogeniculata*; C. *Digentia fasciata*; D. *Digentia viridissima* sp. nov. Images are under 12× magnification.

Table 1. Measurements of *Digentia rufogeniculata*. P, length of the pronotum in the midline; L, overall length from the tip of the fastigium to the most posterior part of the genitalia, measured in lateral view; Ant, length of antenna from the scape to the tip of antenna; IOS, intern ocular space measured dorsally; E-E, extern ocular space measured dorsally; F, maximum length of the hind femur; FD, depth of femur measured as the distance between the two parallel lines running through the dorsal and ventral extremities of the femur, drawn parallel to the long axis of the femur; Ta1, Ta2, Ta3, lengths of each of the three hind tarsal segments; Sp Ext, number of external spines in the hind tibia; Sp Int, number of internal spines in the hind tibia. The foot formula shows relative lengths of the three tarsal segments within the total length of the foot.

Male													
Length/number	P	L	Ant	IOS	E-E	F	FD	Ta1	Ta2	Ta3	Ta1+2+3	Sp Ext	Sp Int
Minimum	4.62	20.44	11.96	0.58	4.33	15.17	2.88	1.49	0.59	2.03	4.51	8	9
Maximum	6.09	26.22	12.92	0.78	4.98	16.58	3.29	2.09	0.69	2.66	5.16	9	10
Average (AV)	5.14	23.56	12.54	0.71	4.58	15.78	3.13	1.81	0.65	2.31	4.77	8.5	9.5
N	4	4	4	4	4	4	4	4	4	4	4	4	4
Foot formula								38%	14%	48%			
Ratios	L/P	Ant/P	IOS/P	E-E/P	F/P	FD/P	Ta1/P	Ta2/P	Ta3/P	Ta1-3/P	F/FD	Ta1-3/F	
Minimum	4.21	2.47	0.13	0.82	2.72	0.53	0.32	0.11	0.40	0.85	4.78	0.29	
Maximum	5.23	2.80	0.16	0.94	3.39	0.68	0.38	0.14	0.58	1.04	5.27	0.31	
Average	4.69	2.61	0.14	0.90	3.10	0.62	0.35	0.13	0.45	0.93	5.05	0.30	
N	4	3	4	4	4	4	4	4	4	4	4	4	
Female													
Length/number	P	L	Ant	IOS	E-E	F	FD	Ta1	Ta2	Ta3	Ta1+2+3	Sp Ext	Sp Int
Minimum	5.51	25.05	10.19	0.70	4.89	16.93	3.19	1.87	0.70	2.52	5.10	8	9
Maximum	6.10	27.65	12.65	0.95	5.38	18.71	3.78	2.50	0.86	2.63	5.75	9	10
Average (AV)	5.88	26.53	11.42	0.86	5.11	18.02	3.51	2.14	0.74	2.55	5.45	8.5	9.5
N	5	5	2	5	5	5	5	4	4	4	4	4	4
Foot formula								39%	14%	47%			
Ratios	L/P	Ant/P	IOS/P	E-E/P	F/P	FD/P	Ta1/P	Ta2/P	Ta3/P	Ta1-3/P	F/FD	Ta1-3/F	
Minimum	4.33	1.85	0.12	0.83	2.94	0.55	0.32	0.11	0.42	0.89	4.59	0.30	
Maximum	4.59	2.07	0.16	0.90	3.15	0.69	0.41	0.14	0.46	0.99	5.65	0.32	
Average	4.51	1.96	0.15	0.87	3.07	0.60	0.37	0.13	0.44	0.93	5.15	0.31	
N	5	2	5	5	5	5	4	4	4	4	4	4	
Sexual dimorphism													
Length	P	L	Ant	IOS	E-E	F	FD	Ta1	Ta2	Ta3	Ta1+2+3		
AV male / AV female	0.87	0.89	1.10	0.83	0.90	0.88	0.89	0.84	0.88	0.90	0.88		
Divided by 0.87	1.01	1.02	1.26	0.95	1.03	1.01	1.02	0.97	1.01	1.04	1.01		

rounded apex; cercus conical with acute apex, curved outwards, reaching or exceeding the tip of the supra-anal plate (Fig. 12A, D); dorsal ovipositor valves long, slightly incurved, smooth, with rounded apex; ventral ovipositor valve wide basally, with rounded corner or lobe, slightly incurved in the middle, apically straight, with rounded apex; egg guide straight, pointed, about the half of the length of ventral ovipositor valves (Fig. 13B).

Sexual dimorphism. Ant male/Ant female is 1.10; after normalization, the male antennae are 1.26 times longer than the female antennae (Table 1). The male interocular space is also slightly narrower (0.95) (Table 1). After normalization, the ratios of the other body dimensions of *D. rufogeniculata* are closely similar in both sexes. For this species, the foot formula is practically identical in the two sexes; the second tarsal segment is very short (14% of the foot) as is typical for non-arboreal grasshoppers (Table 1).

Coloration. This is in comparison to Ramme’s description; when we studied the specimens, they were older and drier than when Ramme described them.

Male and female. (Fig. 4) Body multicolored, predominantly olive-green (olive-brown for Ramme). Scape and pedicel olive-green and flagellum blackish; fastigium of vertex olive-green; vertex olive-green; eyes brown (dried); frons olive or ochraceous; clypeus, labrum and palps olive-green. Pronotal disc, mesothoracic and metathoracic tergites olive-green, sulci of pronotum black; prothoracic, mesothoracic and metathoracic sterna olive-green, olive or ochraceous; middle legs olive-green or olive; hind femur predominantly greenish,

olive-green or olive (olive-brown or olive for Ramme); when greenish, inner side olive (blueish olive for Ramme). Knee reddish or brownish, with upper genicular lobe blackish; hind tibia green-blue; tarsi dirty olive. Abdominal tergites, supra-anal plate and cercus, ovipositor valves greenish; sub-genital plate olive or ochraceous.

Distribution.—Democratic Republic of Congo (RD Congo), Le Marinel leg.; Mondombe (9°12'7"N, 22°48'4"E) – DR Congo, R. Mayné leg.; Bumbuli (2°24'32"N, 20°31'19"E) – DR Congo, Dr J. Brédo leg.; Oshwe (2°23'51"N, 19°26'11"E) – DR Congo, Dr J. Maes leg.; Fandria (6°7'2"N, 18°59'43"E) – DR Congo, R.P. Hulstaert leg.; Ubangi Binga (2°28'54"N, 20°25'57"E) – RD Congo, Dr J. Brédo leg.; Bambesa (3°26'50"N, 18°51'46"E) – DR Congo, Dr J. Brédo leg.; Equateur: Bokuma (3°25'15"N, 27°54'21"E) – RD Congo, R.P. Hulstaert leg.; Tsluapa: Boende (07°28'11"N, 20°50'20"E) – DR Congo, R.P. Wynants leg.; Equateur: Bokuma (3°25'15"N, 27°54'21"E) – DR Congo, Rév. P. Lootens leg. (Fig. 1).

Digentia fasciata Ramme 1929

Figs 1, 5C, 7C, 8D, 9B, E, 10B, G, 12B, E, 13C, 14A, B, 15A, I, Tables 2, 4

Type material.—Holotype: CAMEROON • ♂; Lolodorf; L Conradt S leg.; DORSA BA000033S01C. Allotype: CAMEROON • ♀; Yaoundé; V Carnap S leg.; DORSA BA000033S02; MfN. [not examined]

Examined material.— 7 (4 ♂ and 3 ♀): ♂, Mbalmayo, CAMEROON, 15-I-1974, specimen N° 74012, T.E. Rowell leg., N. Jago ID., RC; ♂, Ngoyla, CAMEROON, IV-2021, specimen N° 2021012, C. Oumarou-Ngoute leg., ONC; ♂, Ngoyla, CAMEROON, IV-2021, specimen N° 2021013, C. Oumarou-Ngoute leg., ONC; ♂, Ngoyla, CAMEROON, IV-2021, specimen N° 2021015, C. Oumarou-Ngoute leg., ONC; ♀, Mbalmayo, CAMEROON, 15-I-1974, specimen N° 74011, T.E. Rowell leg., RC; ♀, Ngoyla, CAMEROON, IV-2021, specimen N° 2021016,

C. Oumarou-Ngoute leg., ONC; ♀, Ngoyla, CAMEROON, IV-2021, specimen N° 2021017, C. Oumarou-Ngoute leg., ONC; (Fig. 14). We were unfortunately unable to borrow the types from Berlin.

Redescription.—The original description of Ramme 1929 of this species is very short; the English version is “Fastigium somewhat longer than broad, rounded in front. Antennae 1.25× the head and pronotum together, apically somewhat thickened. Anal segment with produced and raised edges. Supra-anal plate narrow, tongue-shaped, basally expanded, with shallow longitudinal medial groove. Cercus tapers to a long spike. Female also corresponds to this.” We give here a more extended description.

Male. Body of medium size (average L = 17.98 mm; Table 2), integument shiny, rugose on head, pronotum, tergites of mesothorax and metathorax, and the first abdominal tergites.

Head. Antennae filiform, longer than head and pronotum together (average Ant/P = 2.14); fastigium of vertex short, about twice as wide as long, pentagonal, slightly oblique and rugose, frontal ridge well developed. Eyes oval, protuberant; interocular space (average IOS = 0.38 mm) slightly wider than antennae scape, with weak medial furrow.

Thorax. Pronotum cylindrical, lateral carinae absent, medial carinae weak; midline of the disc crossed by three deep transverse sulci, space between sulci 2 and 3 slightly wider than metazona; metazona short, about one-fourth of the length of prozona; posterior margin of metazona concave, notched in the midline. Anterior margin of pronotum rounded, very slightly notched in the midline (Fig. 5C); prosternal process conical, pointed; mesosternal space about 2 times longer than wide, lobe rounded; metasternal space open, less than half the width of the mesosternal space. Tegmina extremely reduced, minute, narrow, and lobiform, reaching or slightly exceeding the posterior margin of mesothoracic segment (Fig. 7C);

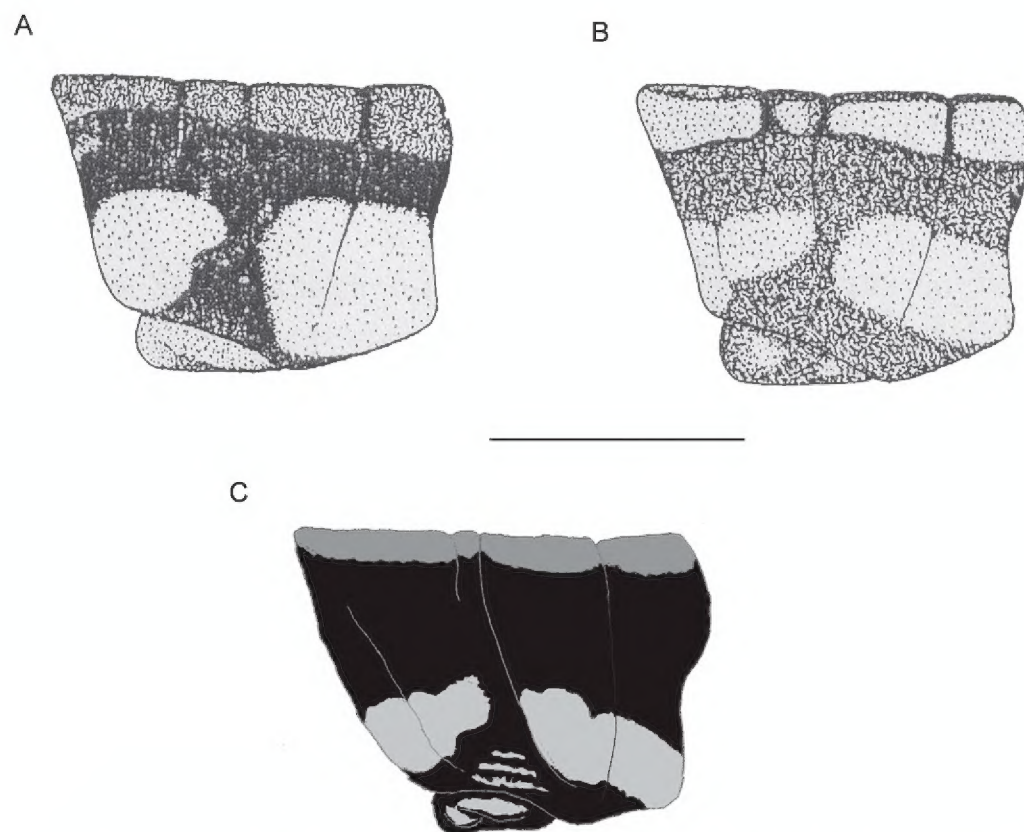


Fig. 6. Pronotum, lateral view, of the *Digentia* species showing pattern of coloration. A. *Digentia punctatissima* (from Ramme 1929); B. *Digentia fasciata* (from Ramme 1929); C. *Digentia viridissima* sp. nov. Scale bar: 1 cm.

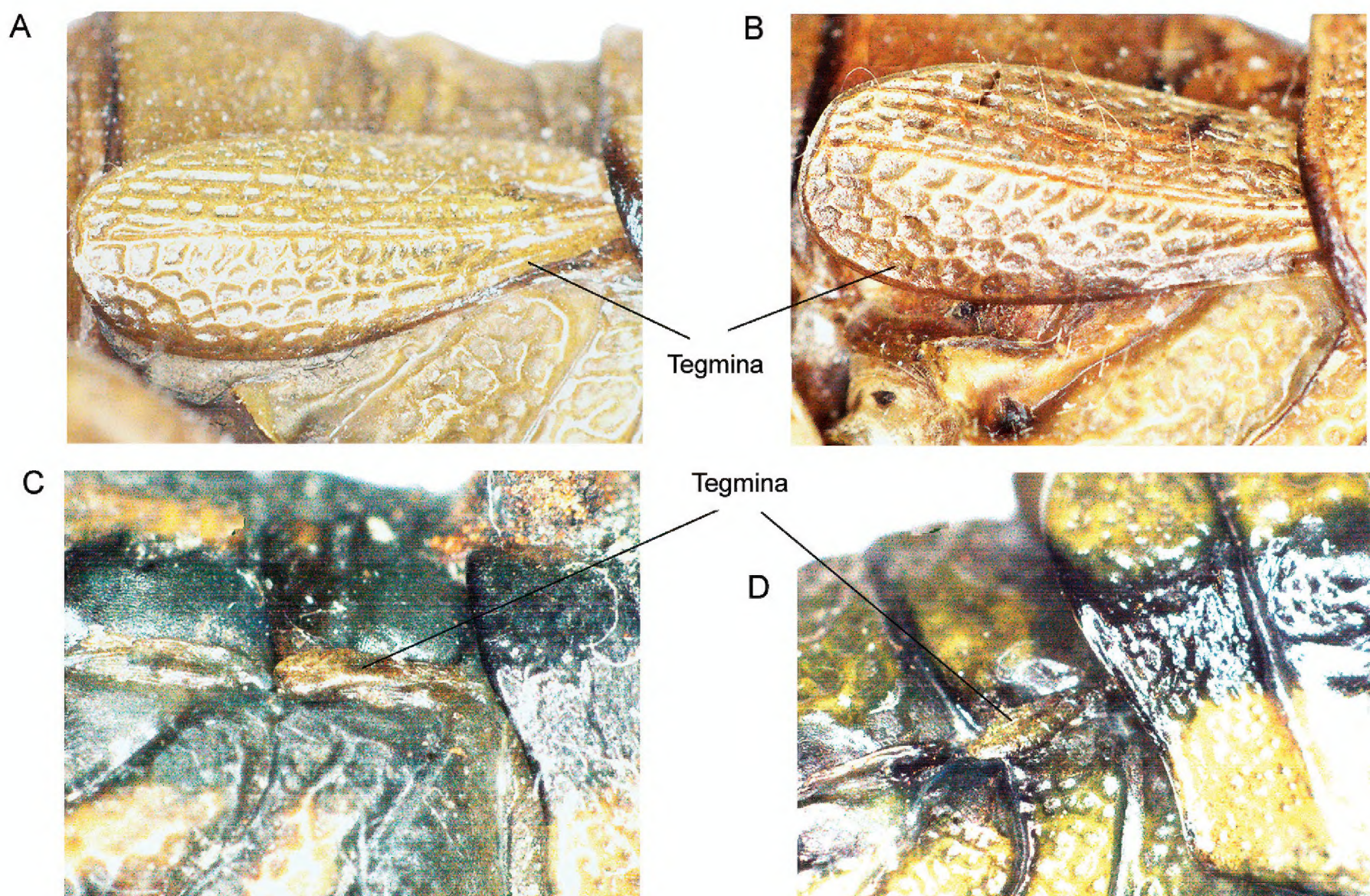


Fig. 7. Tegmina, lateral view, of the *Digentia* species. A. *Digentia karnyi*; B. *Digentia rufogeniculata*; C. *Digentia fasciata*; D. *Digentia viridissima* sp. nov. Images under 50× magnification.

hind femur slender; lower genicular lobe pointed; hind tibia slender, not expanded apically (Fig. 8D). Seven to eight external tibial spines, external apical spine of the tibia present, nine to ten internal tibial spines (Table 2); internal spurs larger than external spurs.

Abdomen. Tympanum wide, rounded; the tip of abdomen curved upward; last abdominal tergite divided in the midline, furcula lobiform, with rounded and upwardly inflated margins or lobes either side of the midline. Supra-anal plate triangular in dorsal view, somewhat elongated distally with a rounded tip. Well-defined medial longitudinal groove proximal, bounded posteriorly by transverse ridge that extends across width of the plate; cercus flat, compressed laterally, inwardly curved, pointed with acute tip very slightly excised, reaching or slightly exceeding the tip of subgenital plate dorsally (Figs 9B, E, 10B, G); subgenital plate conical with rounded upwardly directed apex.

Phallic complex. Phallic complex (Fig. 15A–C) of small size for the genus. Epiphallus small in the genus, bridge not divided, anterior margin slightly concave, notched in the middle, posterior margin almost straight; outer lophi conical, slender, upwardly curved with rounded tip; inner lophi almost rounded; anterior processes slender, incurved; oval sclerite elongated with rounded tips (Fig. 15D–G). Cingular apodemes slender, elongated, with rounded apex, somewhat acute dorsally, rami rounded not fused ventrally; ventrolateral sclerite laterally flat, tapered toward the tips. Endophallus

small and slender; valvular plate with three lobes, the middle lobe blunt; ventral aedeagal sclerite narrow, long with rounded apex; endophallus apodeme wide lobiform; gonopore process elongated with slightly wide and rounded apex (Fig. 15H, I).

Female. In general, similar to the male. Female particularities: medium size (average $L = 23.18$ mm) (Table 2). Tip of abdomen not curved upward; last abdominal tergite without inflated margins or lobes; supra-anal plate triangular with rounded apex; cercus conical with acute apex, straight, reaching or slightly exceeding the tip of the supra-anal plate (Fig. 12B, E); dorsal ovipositor valves straight, smooth, with rounded apex; ventral ovipositor valves wide basally with rounded corner or lobe, incurved in the middle and straight apically with rounded apex; egg guide straight, pointed, about $1/3$ the length of ventral ovipositor valves (Fig. 13C).

Sexual dimorphism. In *D. fasciata*, Ant male/Ant female is 0.76 and 0.94 after normalization (Table 2). The male antennae are slightly shorter than the female antennae (differs from *D. rufogeniculata*). Moreover, male interocular spaces are more narrow (0.82) than in female (Table 2). After normalization, the ratios of the other body dimensions are closely similar in both sexes (Table 2).

Coloration. The description given here differs somewhat from that of Ramme 1929, probably because we describe fresh materials, while Ramme described dried specimens from the Berlin Museum (MfN).

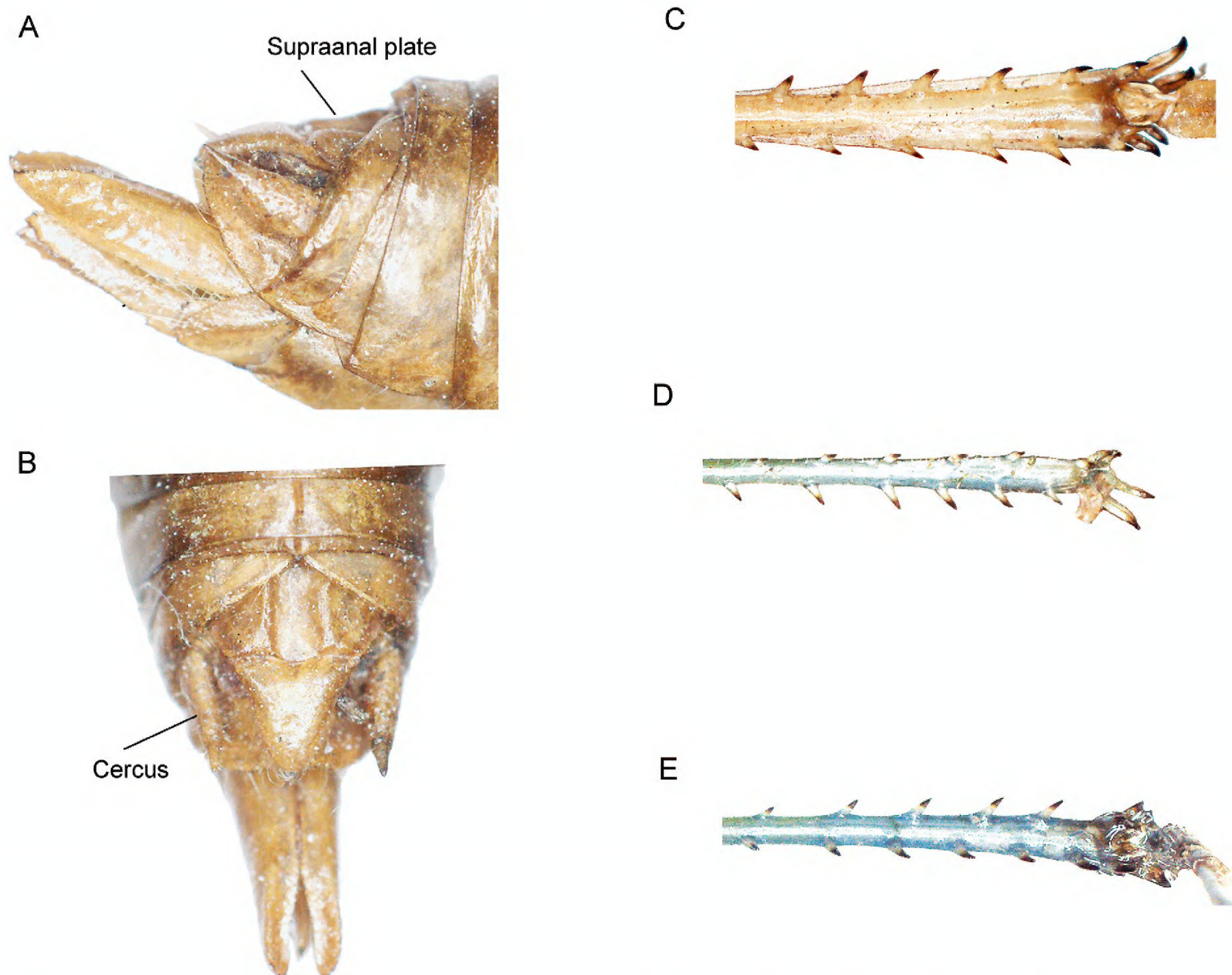


Fig. 8. Female terminalia of *Digentia karnyi* and apical parts of the tibia of *Digentia rufogeniculata*, *Digentia fasciata*, and *Digentia viridissima* sp. nov. A. Female terminalia of *Digentia karnyi*, lateral view; B. Female terminalia of *Digentia karnyi*, dorsal view; C. Tibia of *Digentia rufogeniculata*; D. Tibia of *Digentia fasciata*; E. Tibia of *Digentia viridissima* sp. nov. The tibia of *karnyi* is missing from the unique holotype and so cannot be figured. Ramme (1929) wrote that it was less expanded than that of *rufogeniculata*. Images under $12\times$ magnification.

Table 2. Measurements of *Digentia fasciata*. P, length of the pronotum in the midline; L, overall length from the tip of the fastigium to the most posterior part of the genitalia measured in lateral view; Ant, length of antenna from the scape to the tip of antenna; IOS, intern ocular space measured dorsally; E-E, extern ocular space measured dorsally; F, maximum length of the hind femur; FD, depth of femur measured as the distance between the two parallel lines running through the dorsal and ventral extremities of the femur, drawn parallel to the long axis of the femur; Ta1, Ta2, Ta3, lengths of each of the three hind tarsal segments; Sp Ext, number of external spines in the hind tibia; Sp Int, number of internal spines in the hind tibia. The foot formula shows relative lengths of the three tarsal segments within the total length of the foot.

Male													
Length/number	P	L	Ant	IOS	E-E	F	FD	Ta1	Ta2	Ta3	Ta1+2+3	Sp Ext	Sp Int
Minimum	3.37	16.32	6.72	0.3	3.54	11.04	2.33	1.08	0.43	1.53	3.14	7	9
Maximum	3.91	19.25	8.76	0.47	3.85	11.83	2.51	1.36	0.49	1.71	3.27	8	10
Average (AV)	3.71	17.98	7.74	0.38	3.68	11.45	2.41	1.21	0.47	1.61	3.28	7.5	9.5
N	4	4	2	4	4	3	3	3	3	3	3	3	3
Foot formula								37%	14%	49%			
Ratios	L/P	Ant/P	IOS/P	E-E/P	F/P	FD/P	Ta1/P	Ta2/P	Ta3/P	Ta1-3/P	F/FD	Ta1-3/F	
Minimum	4.17	1.99	0.09	0.95	2.99	0.64	0.45	0.13	0.42	0.63	4.57	0.28	
Maximum	5.08	2.29	0.12	1.05	3.28	0.69	0.54	0.13	0.46	0.69	4.95	0.30	
Average	4.70	2.14	0.10	0.99	3.15	0.66	0.50	0.13	0.44	0.65	4.75	0.29	
N	4	2	4	4	3	3	3	3	3	3	3	3	
Female													
Length/number	P	L	Ant	IOS	E-E	F	FD	Ta1	Ta2	Ta3	Ta1+2+3	Sp Ext	Sp Int
Minimum	4.35	22.71	9.93	0.49	4.24	13.42	2.89	1.55	0.52	1.86	4.08	7	9
Maximum	4.69	23.45	10.32	0.63	4.44	15.26	2.95	1.70	0.57	2.10	4.22	7	9
Average (AV)	4.56	23.18	10.17	0.57	4.33	14.34	2.92	1.64	0.55	1.96	4.14	7	9
N	3	3	3	3	3	3	3	3	3	3	3	3	3
Foot formula								40%	13%	47%			
Ratios	L/P	Ant/P	IOS/P	E-E/P	F/P	FD/P	Ta1/P	Ta2/P	Ta3/P	Ta1-3/P	F/FD	Ta1-3/F	
Minimum	4.90	2.20	0.11	0.93	3.09	0.62	0.35	0.11	0.40	0.88	4.55	0.27	
Maximum	5.39	2.28	0.13	0.97	3.25	0.68	0.37	0.13	0.48	0.97	5.21	0.31	
Average	5.09	2.23	0.12	0.95	3.15	0.64	0.36	0.12	0.43	0.91	4.91	0.29	
N	3	3	3	3	3	3	3	3	3	3	3	3	
Sexual dimorphism													
Length	P	L	Ant	IOS	E-E	F	FD	Ta1	Ta2	Ta3	Ta1+2+3		
AV male / AV female	0.81	0.78	0.76	0.67	0.85	0.80	0.82	0.74	0.85	0.82	0.79		
Divided by 0.81	1.00	0.96	0.94	0.82	1.05	0.99	1.02	0.91	1.05	1.02	0.98		

Male and female. (Fig. 14) Body multicolored, predominantly green-yellow (Ramme 1929 described as yellow-brown); fastigium of vertex olive-yellow; vertex olive-yellow with black or green-black longitudinal bands either side of the midline extending onto pronotum, mesothorax, metathorax, and up to the fifth abdominal segment, or reaching the last segment in some specimens. Eyes blackish in life, fading to brown when dried; frons and genae olive-yellow (dirty olive for Ramme), the olive-yellow band continues laterally forming two patches on the pronotal lobes (Fig. 6B) and extending rearwards to the mesothoracic and the metathoracic pleura; distal part of clypeus and labrum olive-yellow, apical part brown; mandibles brown, and palps green-olive, scape and pedicel of antennae green, flagellum green-brown or black. Pronotal disc multicolored, predominantly olive-yellow with a medial black or green-black stripe, and two more lateral black stripes that extend dorsally onto the mesothoracic and metathoracic tergites; transverse sulci of the pronotum black; prothoracic, mesothoracic and metathoracic sterna red. Middle legs dirty olive, hind femur predominantly green, upper internal area and medial external area green, basal external area, basal internal area and medial internal area red distally but greenish proximally; upper genicular lobes black, basal lobe green-yellow; tibia green blue (Ramme described as olive-green), tibial spines green-yellow with black tips; tarsi green-yellow or ol-

ive. Abdominal tergites olive-yellow with a medial black or green-black band, and two more lateral bands reaching the last segment in some specimens; supra-anal plate and cercus olive-green, ovipositor valves olive-green; sub-genital plate and abdominal sterna red.

Distribution.—CAMEROON: Lolodorf (4°7'51"N, 10°38'30"E), L. Conradt S leg.; Mbalmayo (4°38'3"N, 11°25'35"E) – (RC) ; Ngoyla (3°39'35"N, 13°56'11"E) – (ONC) ; Ongot (3°51'28"N, 11°23'59"E) – (ONC) ; Zamakoe (3°20'17"N, 11°19'8"E) – (ONC) ; Ngutadjap (2°42'N, 11°03'E) – (ONC). Ramme (1929) also refers to a female from the region of Ouessou, Congo Republic (1°36'38"N, 16°3'5"E) (Fig. 1).

Habitat.—At Ngutadjap and Ngoyla, we found *Digentia fasciata* in the same habitat as *Digentia viridissima* sp. nov. We describe this habitat below (Table 4).

Digentia karnyi Ramme 1929

Figs 1, 5A, 6B, 7A, 8A, B, 13A, 16A–C

Type material.—Holotype: DEMOCRATIC REPUBLIC OF THE CONGO • ♀; Africa, West-Central Tropical Africa, Zaire, Tolo; L. Conradt S. leg.; MRAC Tervuren KMMA; DORSA BA 000033S01. [examined]

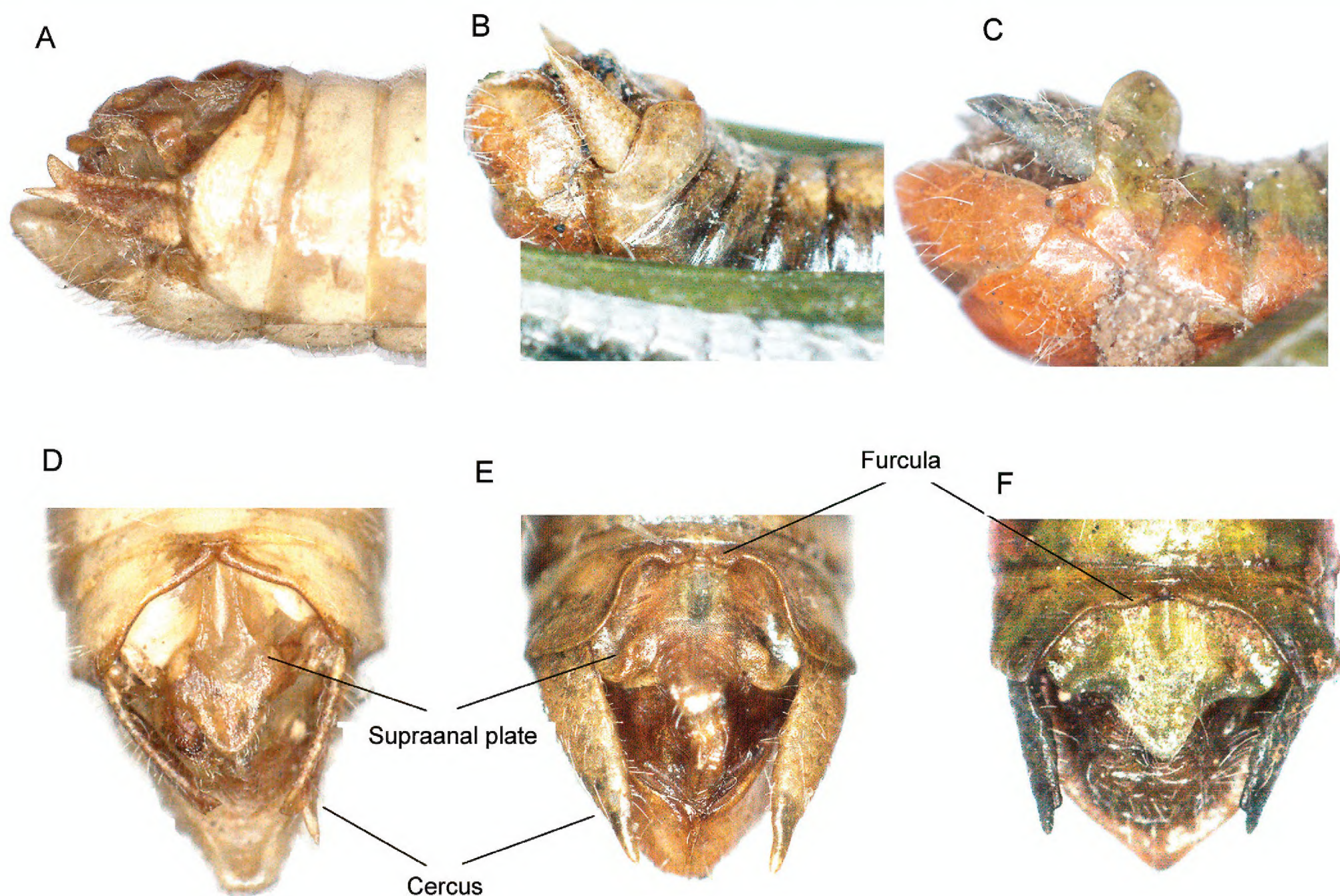


Fig. 9. Male terminalia of *Digentia rufogeniculata*, *Digentia fasciata*, and *Digentia viridissima* sp. nov. A. *Digentia rufogeniculata*, lateral view; D. *Digentia rufogeniculata*, dorsal view; B. *Digentia fasciata*, lateral view; E. *Digentia fasciata*, dorsal view; C. *Digentia viridissima* sp. nov., lateral view; F. *Digentia viridissima* sp. nov., dorsal view. Images under 12× magnification.

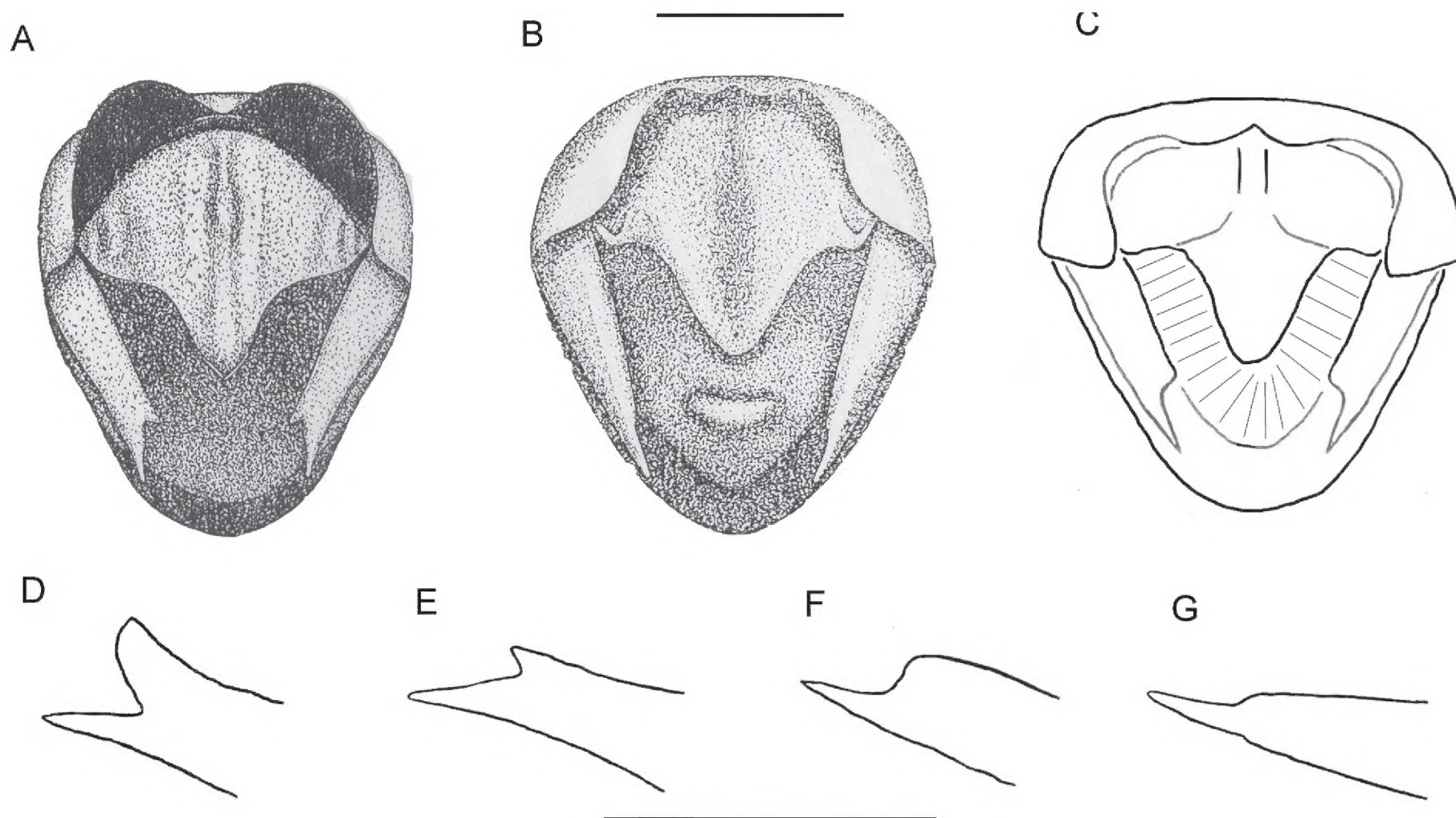


Fig. 10. Drawings of the male terminalia of the *Digentia* species showing different degrees of excision in the cerci tips. A. *Digentia punctatissima* terminalia (from Ramme 1929); B. *Digentia fasciata* terminalia (from Ramme 1929); C. *Digentia viridissima* sp. nov. terminalia; D. Cerci tip of *Digentia rufogeniculata*; E. Cerci tip of *Digentia punctatissima*; F. Cerci tip of *Digentia viridissima* sp. nov.; G. Cerci tip of *Digentia fasciata*. Drawings of the terminalia are at 25× magnification, that of the cerci tips at 50×. Scale bars: 1 mm.

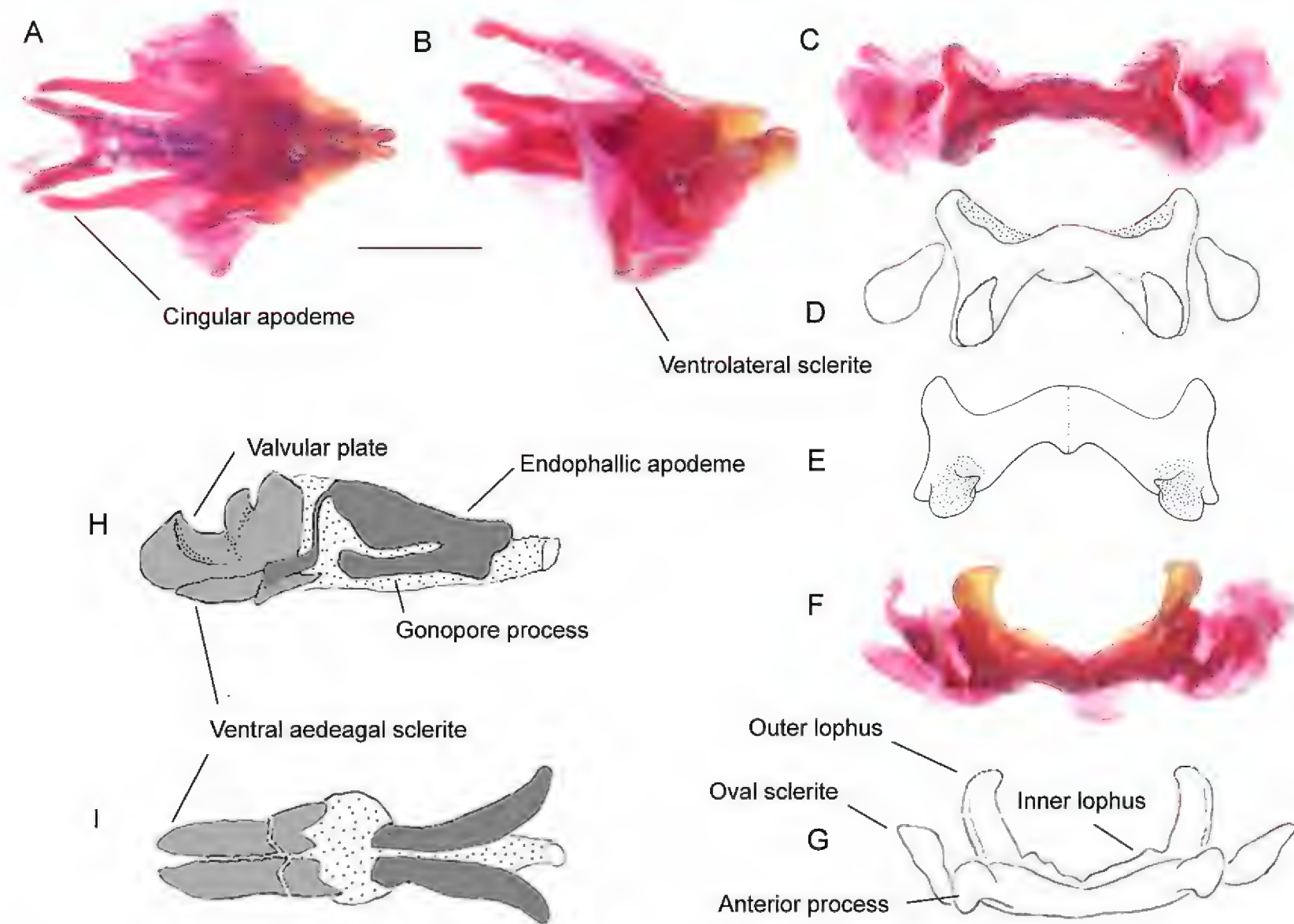


Fig. 11. Phallus of *Digentia rufogeniculata*. A. Photo of the phallus complex without epiphallus, dorsal view; B. Photo of the phallus complex without epiphallus, lateral view; C. Photo of epiphallus, dorsal view; D. Drawing of epiphallus, dorsal view; E. The same view of epiphallus by Hollis 1975 (without oval sclerites); F. Photo of epiphallus, axial view; G. Drawing of epiphallus, axial view; H. Endophallus lateral view; I. Endophallus ventral view. Scale bar: 1 mm.

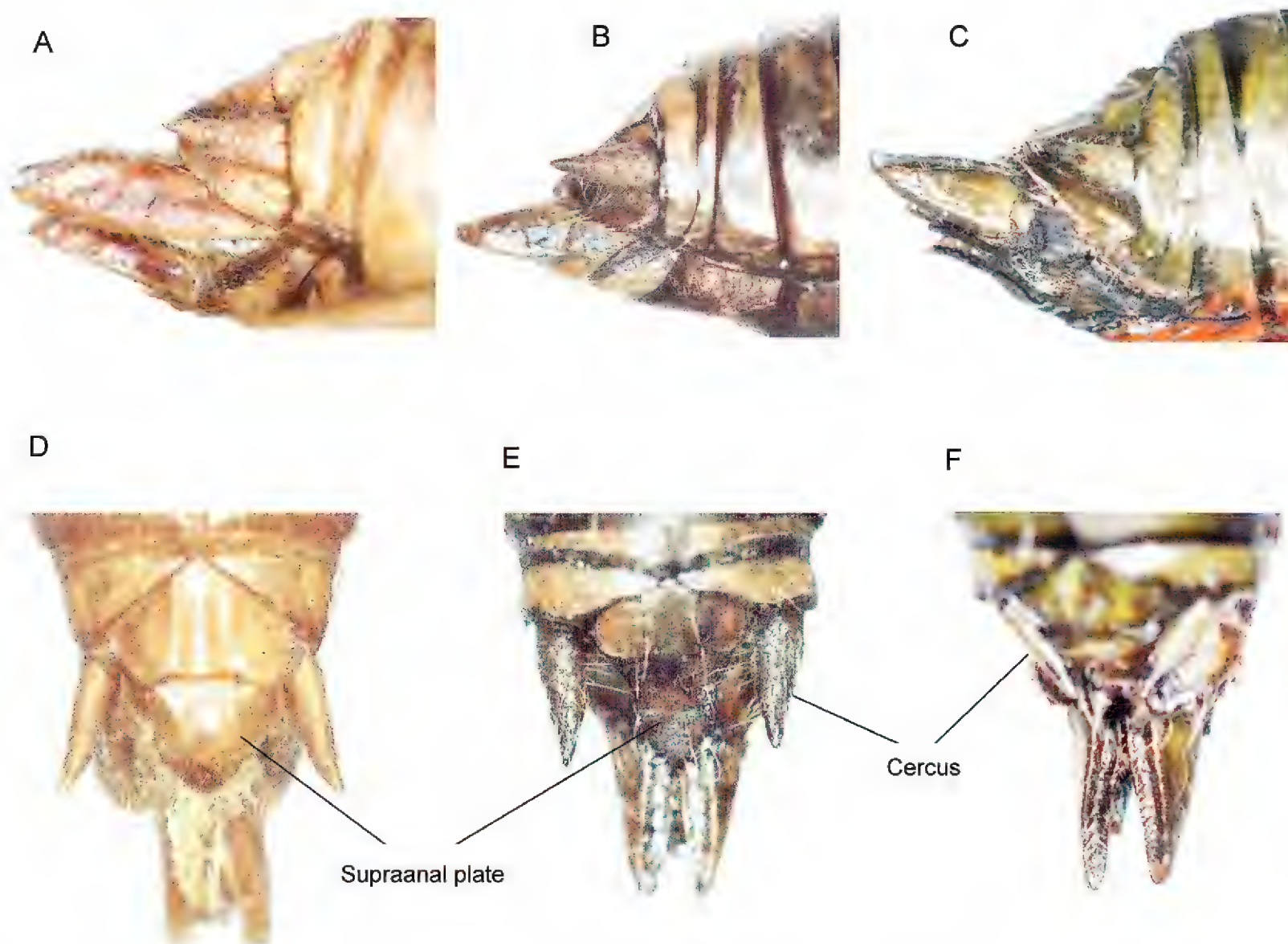


Fig. 12. Female terminalia of *Digentia rufogeniculata*, *Digentia fasciata*, and *Digentia viridissima* sp. nov. A. *Digentia rufogeniculata*, lateral view; B. *Digentia fasciata*, lateral view; C. *Digentia viridissima* sp. nov., lateral view; D. *Digentia rufogeniculata*, dorsal view; E. *Digentia fasciata*, dorsal view; F. *Digentia viridissima* sp. nov., dorsal view. Images under 12× magnification.

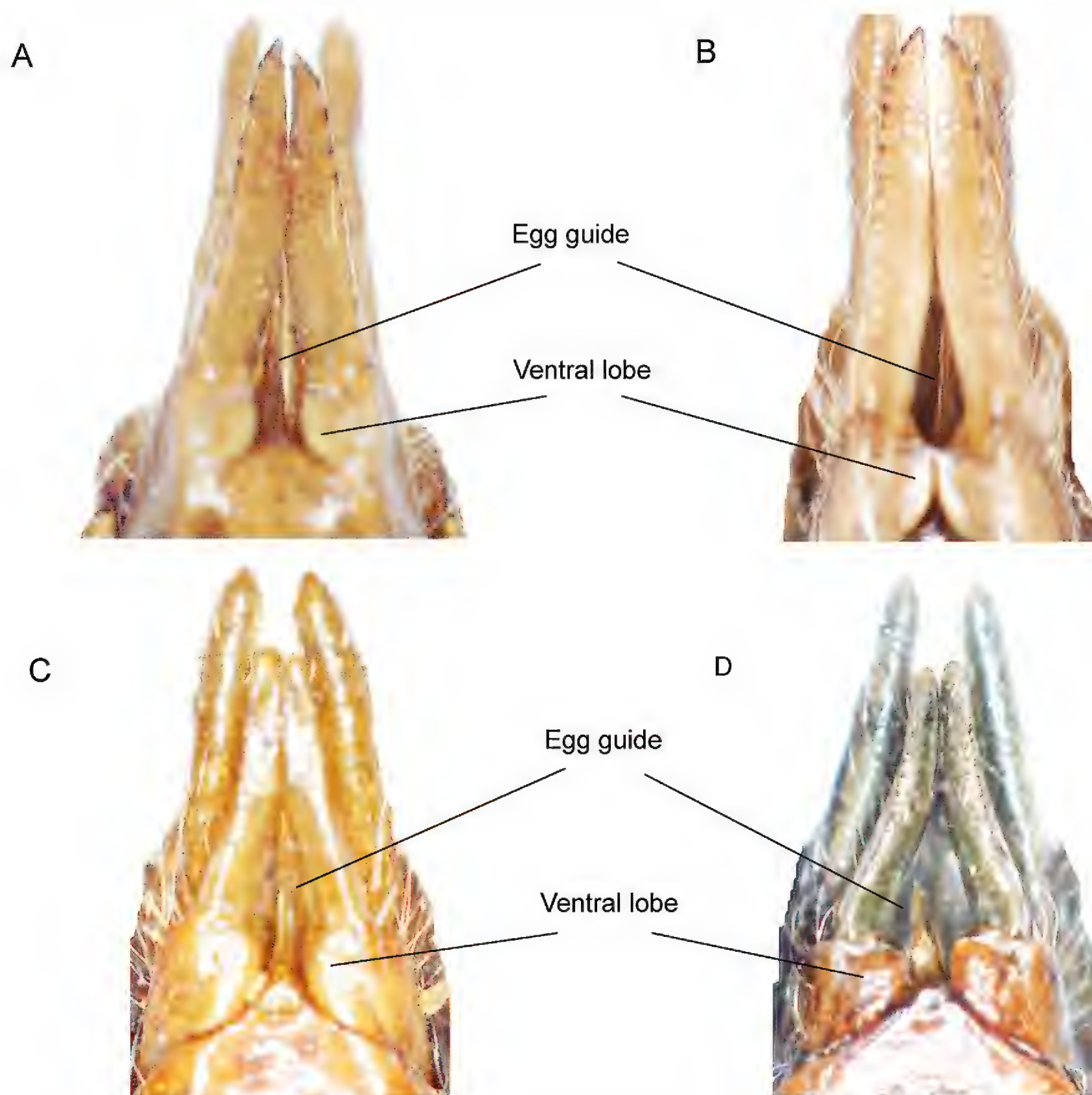


Fig. 13. Egg guide of the *Digentia* species. A. *Digentia karnyi*; B. *Digentia rufogeniculata*; C. *Digentia fasciata*; D. *Digentia viridissima* sp. nov. Images under 12× magnification.

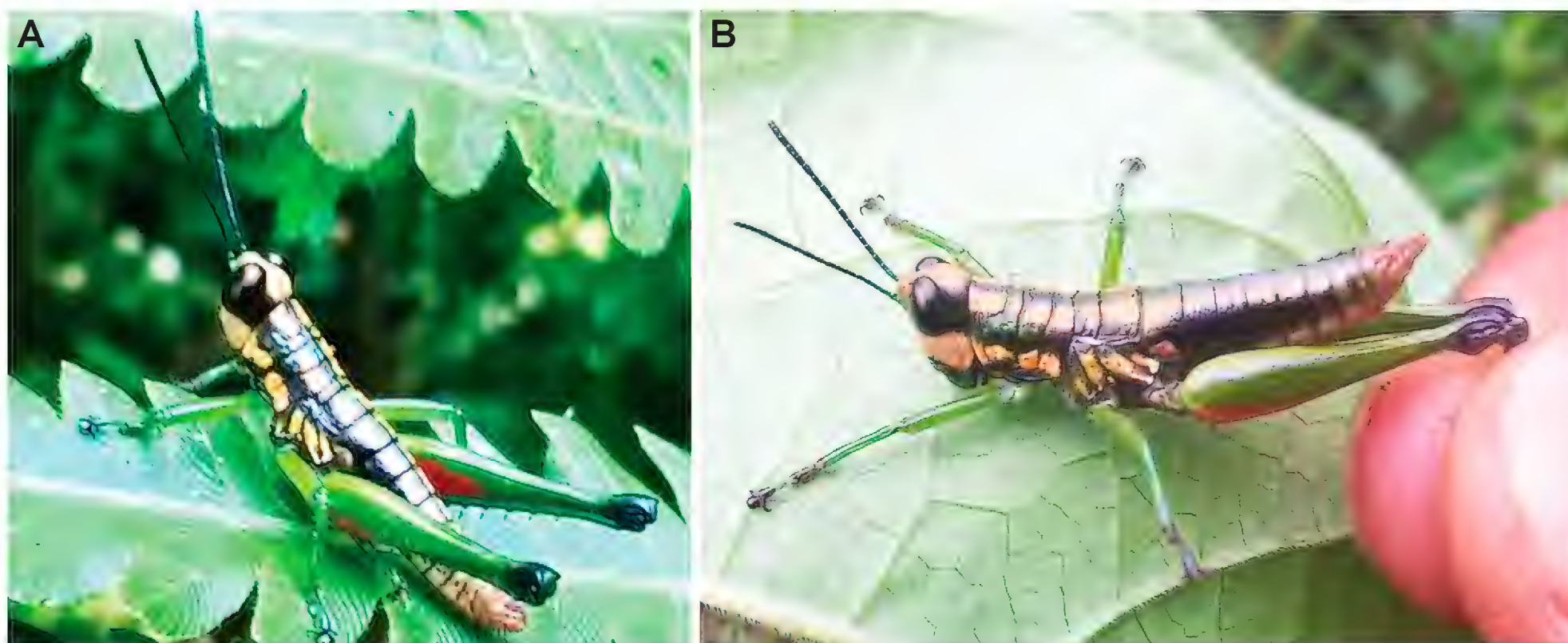


Fig. 14. Habitus of *Digentia fasciata*. A. Male (photo from Zamakoe, Division of Nyong et So'o, Cameroon, 29. 07. 2017, (ONC); B. Female (photo from Ongot, Division of Méfou-et-Akono, Cameroon, 25. 10. 2017, (ONC)).

Redescription.—We give a more extended description of the type but have retained some sentences of Ramme 1929 and Hollis 1975 that are important in the comparison between *D. rufogeniculata* and this species.

Male. Unknown; male specimens have never been reported.

Female. Body of medium size ($L = 27.72$ mm), integument shiny, genae and rear of head smooth except for two rows of spots arising from the fastigial ridges. Frons coarsely wrinkled, pronotum, tergites of mesothorax and metathorax, and the first abdominal tergites rugose.

Head. Head thick (antennae missing); fastigium of vertex short, about twice as wide as long, pentagonal, slightly concave and rugose, frontal ridge well developed. Eyes oval, protuberant; interocular space slightly wider than antennae scape with a weak medial furrow.

Thorax. Pronotum cylindrical, lateral and medial carinae absent; midline of the disc crossed by three deep transverse sulci, the space between the sulci 2 and 3 narrower than metazona; metazona short, about one-half of the length of prozona; anterior and posterior margin of metazona rounded, slightly notched in the midline (Fig. 5A); prosternal process rather long, thin, pointed; mesosternal space about 2 times longer than wide, lobe rounded; metasternal space open, wider than the half of the mesosternal space. Tegmina long, oval, strongly veined with reticulation, coarsely areolate, reaching a little beyond the first abdominal segment (Fig. 7A) (Hollis 1975 says that the female tegmina of *D. karnyi* appear narrower than in *D. rufogeniculata*). Hind femur slender; hind tibia wide in the apical half, relatively massive (Ramme 1929 says that this species differs from *D. rufogeniculata* in having the hind tibia less wide apically). Hind tibia and tarsi are now missing.

Abdomen. Tympanum wide, oval; the tip of abdomen slightly curved upward; last abdominal tergite divided in the midline, lacking upwardly inflated margins or lobes either side of the midline. Supra-anal plate triangular in dorsal view, with a rounded tip, weak medial longitudinal groove proximally, bounded posteriorly by a very weak transverse ridge that extends across the width of the plate (Hollis 1975 says that the posterior margin of the subgenital plate of *D. karnyi* is more sharply triangular than in *D. rufogeniculata* and the ventral concavity is more rounded in *D. karnyi*). Cercus conical, slightly shorter or reaching the supra-anal plate (Fig. 8A, B); dorsal ovipositor valves long, slightly incurved, smooth, slender, with rounded apex; ventral ovipositor valves basally with wide oval corner or lobe, slightly incurved in the middle and straight apically with rounded tip; egg guide acute pointed, one-half the length of the ventral ovipositor valves (Fig. 13A).

Dimensions. Female. $P = 5.76$ mm; $L = 27.72$ mm; $IOS = 0.86$ mm; $E-E = 5.19$ mm.

Coloration. When we examined the type specimen, it was already in a bad state: antennae and hind femur broken, discolored, almost brown in many parts. However, it seems to have been multicolored with a pale green-yellow dominance (Fig. 16). Ramme 1929 described it as dirty olive yellow; eyes black-brown; frons paler brown, front edge of the elytra narrowly brown, hind edge pale faded brown; front and middle legs dirty brown, hind femur pure red brown, knee blood red, basal half of tibia brown, apical half darker with some olive spots, tarsi brown.

Distribution.—Tolo ($2^{\circ}53'57''N$, $18^{\circ}33'5''E$) – DR Congo, Dr J. Maes leg. (Fig. 1).

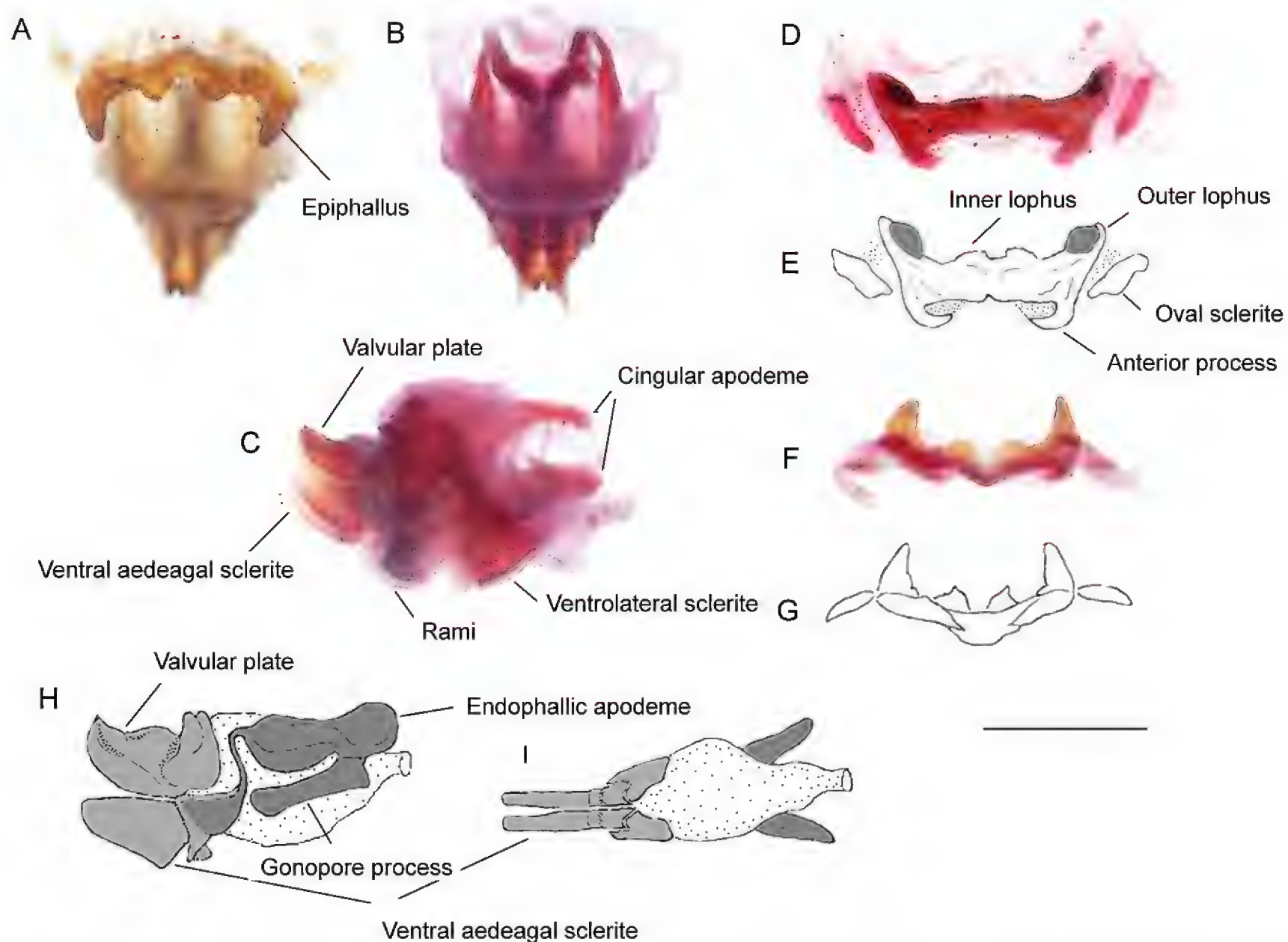


Fig. 15. Phallus of *Digentia fasciata*. A, B. Photo of the phallus complex with epiphallus, dorsal view (A not colored, B colored); C. Photo of the phallus complex without epiphallus, lateral view; D. Photo of epiphallus, dorsal view; E. Drawing of epiphallus, dorsal view; F. Photo of epiphallus, axial view; G. Drawing of epiphallus, axial view; H. Endophallus lateral view; I. Endophallus ventral view. Scale bar: 1 mm.

Digentia viridissima sp. nov.

<https://zoobank.org/D6EBC878-F1A9-4AA7-AF72-8EA5398FA53B>

Figs 1, 5D, 6C, 7D, 8E, 9C, F, 10C, F, 13D, 17A–C, 18A–E, 19A–E, 20, Tables 3, 4

Types.—Holotype: CAMEROON • ♂; Division of Vallée du Ntem, Ngutadjap; 7-IV-2023; C. Oumarou-Ngoute leg.; specimen N° 272023AV; MfN. Paratype: • 1 ♀; same data as holotype; specimen N° 212023AV; MfN.

Other material examined.—21 (13 ♂ and 8 ♀): ♂, Ngutadjap, CAMEROON, 7-IV-2023, specimen N° 262023AV, C. Oumarou-Ngoute leg., ONC; ♂, Ngutadjap, CAMEROON, 7-IV-2023, specimen N° 242023AV, C. Oumarou-Ngoute leg., ONC; ♂, Ngutadjap, CAMEROON, 7-IV-2023, specimen N° 232023AV, C. Oumarou-Ngoute leg., ONC; ♂, Ngutadjap, CAMEROON, 7-IV-2023, specimen N° 252023AV, C. Oumarou-Ngoute leg., ONC; ♂, Ngoyla, CAMEROON, 27-V-2019, specimen N° 2021101, C. Oumarou-Ngoute leg., RC; ♂, Ngoyla, CAMEROON, IV-2021, specimen N° 2021042, C. Oumarou-Ngoute leg., ONC; ♂, Ngoyla, CAMEROON, IV-2021, specimen N° 2021040, C. Oumarou-Ngoute leg., ONC; ♂, Ngoyla, CAMEROON, IV-2021, specimen N° 2021043, C. Oumarou-Ngoute leg., ONC; ♂, Ngoyla, CAMEROON, IV-2021, specimen N° 2021011, C. Oumarou-Ngoute leg., ONC; ♂, Ngoyla, CAMEROON, IV-2021, specimen N° 2021008, Oumarou-Ngoute leg., ONC; ♂, Ngoyla, CAMEROON, IV-2021, specimen N° 2021010, Oumarou-Ngoute leg., ONC; ♂, Ngoyla, CAMEROON, IV-2021,

specimen N° 2021007, Oumarou-Ngoute leg., ONC; ♂, Ngoyla, CAMEROON, IV-2021, specimen N° 2021004, Oumarou-Ngoute leg., ONC; ♀, Ngutadjap, CAMEROON, 7-IV-2023, specimen N° 222023AV, Oumarou-Ngoute leg., ONC; ♀, Ngutadjap, CAMEROON, 7-IV-2023, specimen N° 202023AV, Oumarou-Ngoute leg., ONC; ♀, Ngoyla, CAMEROON, 27-V-2019, specimen N° 2021102, C. Oumarou-Ngoute leg., RC; ♀, Ngoyla, CAMEROON, IV-2021, specimen N° 2021047, Oumarou-Ngoute leg., ONC; ♀, Ngoyla, CAMEROON, IV-2021, specimen N° 2021067, Oumarou-Ngoute leg., ONC; ♀, Ngoyla, CAMEROON, IV-2021, specimen N° 2021012, Oumarou-Ngoute leg., ONC; ♀, Ngoyla, CAMEROON, IV-2021, specimen N° 2021002, Oumarou-Ngoute leg., ONC; ♀, Ngoyla, CAMEROON, IV-2021, specimen N° 2021003, Oumarou-Ngoute leg., ONC (Fig. 17).

Type locality.—CAMEROON, Division of Vallée du Ntem, Ngutadjap.

Etymology.—From Latin, *viridissima*, which means “greenest.” Refers to the external habitus of the species, which is the greenest in the genus.

Description.—**Male.** Body of medium size (average L = 19.61 mm; Table 3), integument shiny, rugose on head, pronotum, tergites of mesothorax, metathorax, and the first abdominal tergites.

Head. Antennae filiform, longer than head and pronotum together (average Ant/P = 2.05 mm); fastigium of vertex short, about twice as wide as long, pentagonal, slightly oblique and rugose,

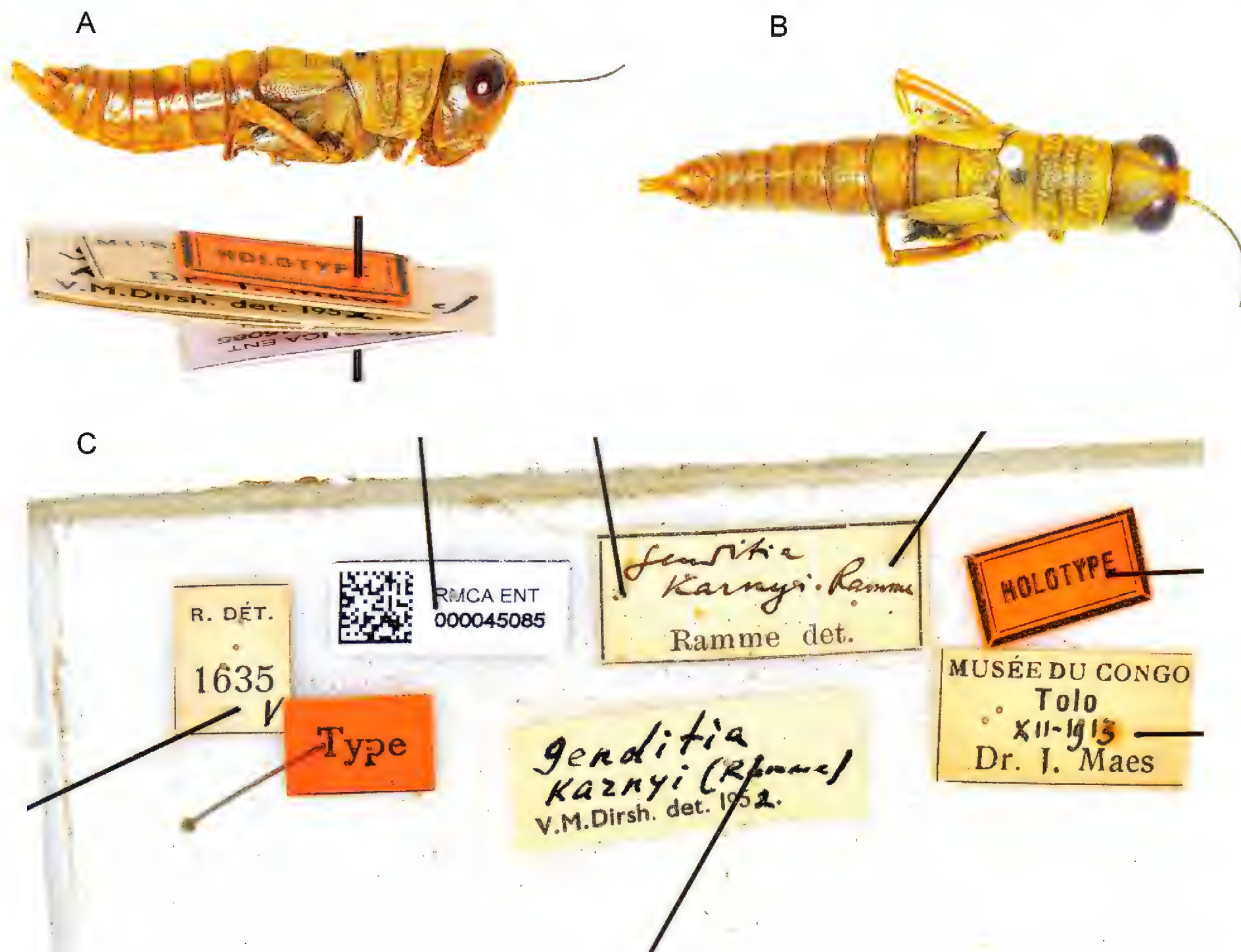


Fig. 16. Holotype of *Digentia karnyi*. A. Holotype, lateral view; B. Holotype, dorsal view; C. Holotype's labels.

Table 3. Measurements of *Digentia viridissima* sp. nov. P, length of the pronotum in the midline; L, overall length from the tip of the fastigium to the most posterior part of the genitalia measured in lateral view; Ant, length of antenna from the scape to the tip of antenna; IOS, intern ocular space measured dorsally; E-E, extern ocular space measured dorsally; F, maximum length of the hind femur; FD, depth of femur measured as the distance between the two parallel lines running through the dorsal and ventral extremities of the femur, drawn parallel to the long axis of the femur; Ta1, Ta2, Ta3, lengths of each of the three hind tarsal segments; Sp Ext, number of external spines in the hind tibia; Sp Int, number of internal spines in the hind tibia. The foot formula shows relative lengths of the three tarsal segments within the total length of the foot.

Male													
Length/number	P	L	Ant	IOS	E-E	F	FD	Ta1	Ta2	Ta3	Ta1+2+3	Sp Ext	Sp Int
Minimum	4.00	17.99	7.77	0.41	3.82	12.03	2.41	0.62	0.29	1.28	2.29	7	9
Maximum	4.32	21.04	9.45	0.51	4.79	13.86	2.99	1.50	0.48	1.83	3.71	8	9
Average (AV)	4.20	19.61	8.63	0.47	4.041	12.61	2.65	1.24	0.41	1.58	3.23	7.5	9
N	13	13	11	13	13	13	13	13	13	13	13	13	13
Foot formula								38%	13%	49%			
Ratios	L/P	Ant/P	IOS/P	E-E/P	F/P	FD/P	Ta1/P	Ta2/P	Ta3/P	Ta1-3/P	F/FD	Ta1-3/F	
Minimum	4.27	1.82	0.10	0.91	2.88	0.60	0.25	0.07	0.32	0.46	4.50	0.19	
Maximum	5.25	2.25	0.13	1.19	3.27	0.71	0.58	0.11	0.43	0.74	5.01	0.29	
Average	4.67	2.05	0.11	0.96	3.00	0.63	0.47	0.10	0.38	0.65	4.77	0.26	
N	13	11	13	13	13	13	13	13	13	13	13	13	
Female													
Length/number	P	L	Ant	IOS	E-E	F	FD	Ta1	Ta2	Ta3	Ta1+2+3	Sp Ext	Sp Int
Minimum	4.75	22.73	7.7	0.56	4.06	13.81	2.90	1.27	0.42	1.84	3.67	7	9
Maximum	5.47	25.78	9.45	0.66	4.60	14.98	3.11	1.66	0.54	2.04	4.09	8	10
Average (AV)	4.98	24.18	8.33	0.62	4.37	14.55	3.03	1.47	0.47	1.98	3.91	7.5	9.5
N	8	8	6	8	8	8	8	8	8	8	8	8	8
Foot formula								37%	12%	51%			
Ratios	L/P	Ant/P	IOS/P	E-E/P	F/P	FD/P	Ta1/P	Ta2/P	Ta3/P	Ta1-3/P	F/FD	Ta1-3/F	
Minimum	4.34	1.62	0.12	0.74	2.74	0.57	0.26	0.08	0.36	0.71	4.62	0.26	
Maximum	5.13	1.85	0.13	0.94	3.07	0.63	0.33	0.11	0.43	0.84	4.93	0.28	
Average	4.86	1.70	0.12	0.88	2.97	0.61	0.29	0.9	0.40	0.79	4.80	0.27	
N	8	6	8	8	8	8	8	8	8	8	8	8	
Sexual dimorphism													
Length	P	L	Ant	IOS	E-E	F	FD	Ta1	Ta2	Ta3	Ta1+2+3		
AV male / AV female	0.84	0.81	1.04	0.75	0.93	0.87	0.87	0.84	0.88	0.80	0.83		
Divided by 0.84	1.00	0.97	1.23	0.89	1.10	1.03	1.04	1.01	1.05	0.95	0.98		

frontal ridge well developed; eyes oval, protuberant; interocular space (average IOS = 0.47 mm) slightly wider than antennae scape, with a weak medial furrow.

Thorax. Pronotum cylindrical, lateral carinae absent, medial carinae weak; midline of the disc crossed by three deep transverse sulci, the space between the sulci 2 and 3 slightly wider than metazona; metazona short, about one-fourth of the length of prozona; posterior margin of metazona concave, notched in the midline; anterior margin of pronotum rounded slightly or not at all notched in the midline (Fig. 5D); prosternal process conical, pointed; mesosternal space about 2 times longer than wide, lobe rounded; metasternal space open, less than half the width of the mesosternal space. Tegmina extremely reduced, minute, narrow, and straight, reaching or slightly exceeding the posterior margin of mesosternal segment (Fig. 7D); hind femur slender; lower genicular lobe pointed; hind tibia slender, slightly expanded apically (Fig. 8E), seven to eight external tibial spines, external apical spine of the tibia present, nine internal tibial spines (Table 3); internal spurs larger than external spurs.

Abdomen. Tympanum wide, rounded; the tip of abdomen curved upward. Last abdominal tergite divided in the midline, furcula blunt, with rounded and upwardly inflated margins either side of the midline; supra-anal plate triangular in dorsal view, somewhat elongated distally, with a rounded tip, weak medial longitudinal groove proximally, bounded posteriorly by a very weak transverse ridge that extends across the width of the plate.

Cercus flat, compressed laterally, inwardly curved, excised apically, slightly shorter than the subgenital plate (Figs 9C, F, 10C, F); subgenital plate conical with rounded upwardly directed apex.

Phallic complex. Phallic complex (Fig. 18A–D) of medium size. Bridge of epiphallus not divided, anterior margin slightly concave, posterior margin almost straight; outer lophi long, slender, conical, upward curved with rounded tip; inner lophi wide rounded; anterior processes slender, incurved; “oval” sclerite almost oval, elongated, with rounded tips (Fig. 19A–E). Cingular apodemes slender elongated with rounded apex, rami rounded not fused ventrally (Fig. 18C, D); ventrolateral sclerite laterally flat, tapered towards the tips (Fig. 18E). Valvular plate robust, celliform, wide in dorsal view with three lobes, the anterior lobe blunt, the posterior edge slightly upturned. Endophallus apically robust and wide; endophallic apodemes slightly slender, lobiform; gonopore process slender, pointed (Fig. 19F, G). Well-developed endophallic flexure, terminating in an endophallic process abutting the ventral aedeagal sclerite (Fig. 20) that constitutes the apical valve. Ventral aedeagal sclerite robust, wide, with rounded apex.

Female. In general, similar to the male. Female particularities: medium size (average L = 24.18 mm) (Table 3). Tip of abdomen not curved upward; last abdominal tergite without inflated margins; supra-anal plate triangular with rounded apex; cercus conical, incurved, with acute apex, reaching or slightly exceeding the supra-anal plate (Fig. 12C, F). Dorsal ovipositor valves slightly incurved, smooth, with rounded apex; ventral ovipositor valves wide basally



Fig. 17. Habitus of *Digentia viridissima* sp. nov. A. Male, lateral view (photo from Ngoyla, Division of Haut-Nyong, Cameroon, 29. 04. 2019, (ONC); B. Male, dorsal view (photo from Ngoyla, Division of Haut-Nyong, Cameroon, 29. 04. 2019, (ONC); C. Female, latero-dorsal view. Photo from Ngutadjap, Division of Vallée-du-Ntem, Cameroon, 07. 04. 2023, (ONC).

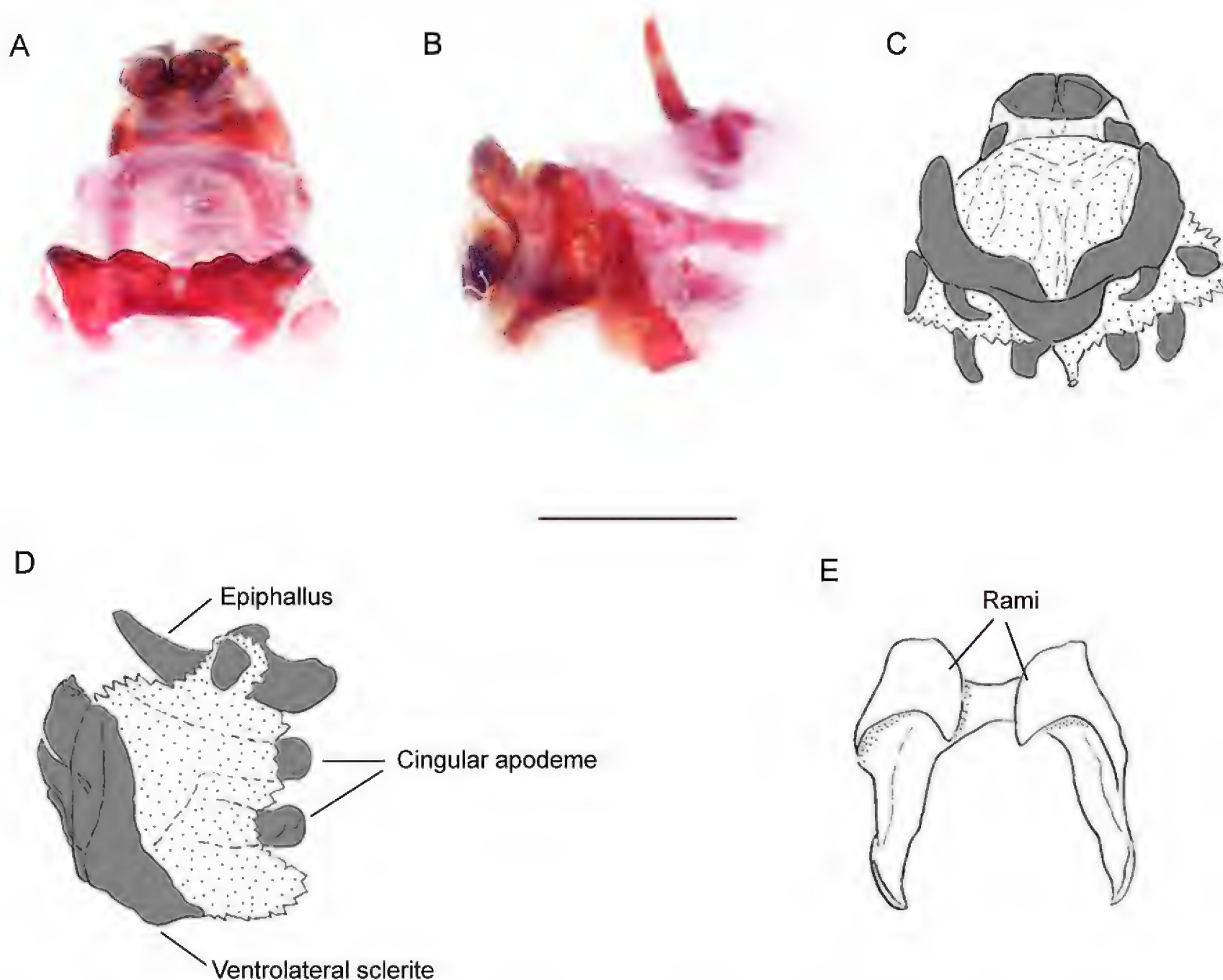


Fig. 18. Phallus and ventrolateral sclerite of *Digentia viridissima* sp. nov. A. Photo of the phallus complex with epiphallus, dorsal view; B. Photo of the phallus complex with epiphallus, lateral view; C. Drawing of all the phallus complex, dorsal view; D. Drawing of all the phallus complex, lateral view; E. Drawing of the ventrolateral sclerite ventral view. Scale bar: 1 mm.

with rounded corner or lobe, strongly incurved in the middle, straight apically, with rounded apex; egg guide straight, pointed, about one-third of the length of ventral ovipositor valves (Fig. 13D).

Sexual dimorphism. The antennae of *D. viridissima* are longer in male than in female (Ant male/Ant female = 1.04, and 1.23 after normalization) (Table 3). The male interocular spaces are narrower (IOS male/IOS female = 0.75, and 0.89 after normalization) than the female ones (Table 3). The ratios of the other body dimensions are closely similar in both sexes (Table 3).

Coloration. Male and female (Fig. 17). Body multicolored, predominantly green-yellow. Scape and pedicel of antennae green, flagellum green basally and green-brown apically. Fastigium of vertex green or green-yellow; vertex green or green-yellow with black longitudinal bands either side of the midline extending onto the pronotum, the mesothorax, metathorax, and up to the fifth abdominal segment, reaching the last segment in some females. Eyes blackish in life, fading to brown when dried; frons green or green-yellow, the lower half more yellowish or with yellow spots which extending posteriorly across the genae as a yellow subocular stripe, forming two yellow patches on the ventral margin of the pronotal lobes (Fig. 6C) and extending rearwards to the mesothoracic and the metathoracic pleura. Distal part of clypeus and labrum green, green-yellow, or yellowish, apical part brown; mandibles and palps green, green-yellow or yellowish. Pronotal disc multicolored, predominantly green or green-yellow with two lateral black stripes that extend dorsally onto the mesothoracic and metathoracic tergites; prothoracic sternum green, mesothoracic and metathoracic sterna red; hind femur predominantly green, upper internal area and medial external area green, basal external area, basal internal

area and medial internal area yellowish distally but greenish proximally; genicular lobes black; tibia green-blue, tibial spines green with black tips; tarsi green. Abdominal tergites green or green-yellow with two black longitudinal bands either side of the midline, reaching the last segment in some females; supra-anal plate and cercus green, ovipositor valves green, subgenital plate red.

Distribution.—CAMEROON, Division of “Haut-Nyong”, Ngoyla: 2°17'44"N, 14°13'57"E, altitude 510 m; 2°16'21"N, 14°16'27"E, altitude 505 m; 2°21'13"N, 14°15'20"E, altitude 498 m. Division of “Valée du Ntem”, Ngutadjap: 2°42'N, 11°03'E, altitude 560 m; (ONC) (Fig. 1).

Habitat.—*Digentia viridissima* sp. nov. and *D. fasciata* live in humid forest, particularly where it is swampy. In the two reported localities, Ngoyla and Ngutadjap, of the south Cameroon plateau, the species shares its habitat with another Oxyine, *Pterotiltus* sp., and several Catantopines, *Gemenata opilionoides*, *Pteropera* spp. At Ngutadjap, the most abundant plant species were undergrowth taxa such as ferns and herbs (Table 4). Among these, *Pteridium aquilinum* (Dennstaedtiaceae) covers more than 75% of the total surface of the site, *Palisota hirsuta* (Commelinaceae) covers 25–50%, and the Marantaceae species, such as *Marantochloa conferta*, *Afrocalanthea rhizantha*, and *Hypselodelphys* sp., cover 5–25% of the total surface (Table 4). The site also has trees and shrubs. The shrub *Leea guineensis* (Leeaceae) covers between 25–50%, and *Eremospatha macrocarpa* (Arecaceae) and *Raphia farinifera* (Arecaceae) cover 5–25% of the site. *Alchornea floribunda* (Euphorbiaceae) and *Tabernaemontana brachyantha* (Apocynaceae) cover less than 5%, and *Artabotrys insignis* var. *batesii* (Annonaceae),

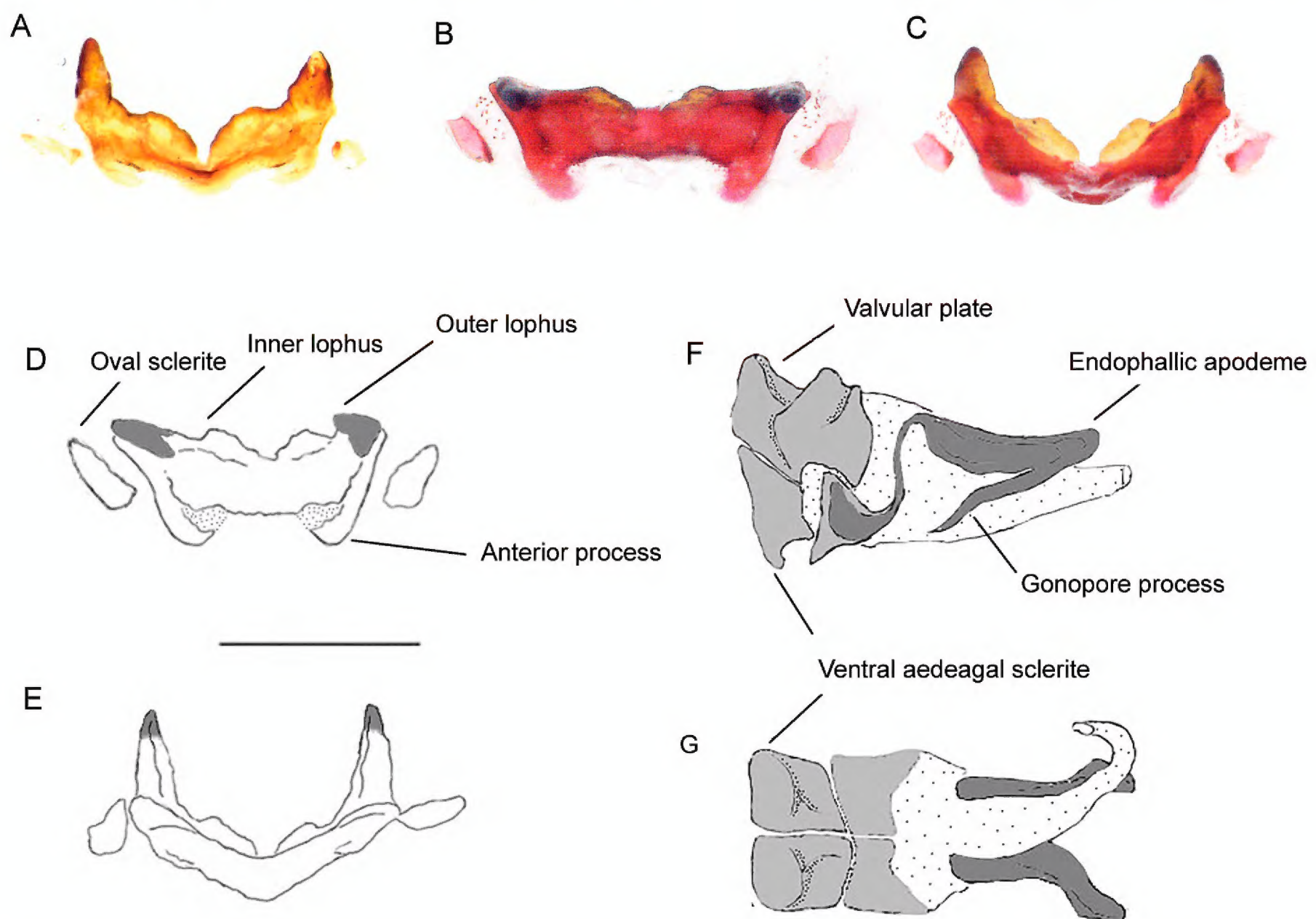


Fig. 19. Epiphallus and endophallus of *Digentia viridissima* sp. nov. A. Photo of epiphallus, axial view without coloration; B. Photo of epiphallus, dorsal view; C. Photo of epiphallus, oblique; D. Drawing of epiphallus, dorsal view; E. Drawing of epiphallus, axial view; F. Drawing of endophallus lateral view; G. Drawing of endophallus ventral view. Scale bar: 1 mm.

Dicranolepis buchholzii (Thylemeleaceae), *Bertiera elabensis* (Rubiaceae), *Guarea glomerulata* (Meliaceae), *Musanga cecropioides* (Cecropiaceae), and *Voacanga* sp. (Apocynaceae) are weakly represented (Table 4). The other uncommon tree species include *Alstonia boonei* (Apocynaceae), *Strombosia pustulata* (Olacaceae), *Pentaclethra macrophylla* (Fabaceae-Caesalpinioideae), *Leptonychia* sp. (Sterculiaceae), and *Calpocalix brevibracteatus* (Fabaceae-Mimosoideae) (Table 4). The *Digentia* and *Pterotiltus* species were usually collected on ferns, but we did not observed *Digentia viridissima* sp. nov. or *D. fasciata* feeding on a particular plant. This is likely because the rarity of specimens of these species in the field led us to quickly capture the few seen without taking time to observe their behavior on the host plant.

Key to the species of the genus *Digentia* Stål, 1878

- 1 Tegmina extremely reduced, minute, narrow, straight, or lobiform (Figs 2, 7C, D); hind tibia not or slightly expanded apically (Fig. 8D, E); body with black longitudinal bands that extend dorso-laterally from vertex in pronotum, mesothorax, metathorax, and up to the fifth abdominal segment or reaching the last abdominal segment (Figs 2, 6, 14, 17)..... 2
- Tegmina longer, oval, strongly veined with reticulation, coarsely areolate, reaching or exceeding beyond the first abdominal segment (Fig. 7A, B); hind tibia wide in the apical half, relatively massive (Fig. 8C); body without black longitudinal bands..... 4
- 2 Male cercus flat or compressed, wide, finely rugose, ventrally produced and pointed dorsally with a sharp corner (Fig. 10A, E); bridge of epiphallus incompletely divided; outer lophi of epiphallus long, large, subconical, tip rounded and curved upward with a characteristic wide medial furrow (Fig. 3)..... *Digentia punctatissima* (Stål, 1875).
- Male cercus flat, compressed laterally, inwardly curved, excised or very slightly excised apically, tip pointed (Fig. 10B, C, G, F); bridge of epiphallus not divided, outer lophi of epiphallus slender, conical, inwardly curved with rounded tip, with a characteristic wide medial furrow (Figs 15D–G, 19A–E)..... 3
- 3 Male cercus flat, pointed with acute tip very slightly incised (Figs 9B, E, 10B, G); furcula of the last abdominal tergite in male lobiform; Phallic complex of small size in the genus (Fig. 15A–C); outer lophi conical, slender, upwardly curved with rounded tip; inner lophi almost rounded (Fig. 15D–G). Endophallus small and slender; ventral aedeagal sclerite narrow, long with rounded apex; gonopore process elongated with slightly wide and rounded apex (Fig. 15H, I)..... *Digentia fasciata* Ramme 1929
- Hind tibia wider apically; female tegmina wider; posterior margin of the subgenital plate less triangular; cercus flat, compressed laterally, inwardly curved, apically strongly forked, longer than the supra-anal plate (Figs 9A, D, 10D); female cerci conical, curved outwards, reaching or exceeding the tip of the supra-anal plate (Fig. 12A, D); body multicolored, predominantly olive-green (olive-brown by Ramme), females with red hind knees; phallic complex of medium size (Fig. 11A, B); epiphallus quite robust, bridge wide; outer lophi strong, conical and upwardly curved, with acute and slightly incurved tip; inner lophi weak, lobiform; anterior processes robust, not incurved (Fig. 11C–G). Endophallus slender; ventral aedeagal sclerite slender, short with rounded apex; gonopore process elongated with slightly wide and rounded apex (Fig. 11H, I)..... *Digentia rufogeniculata* (Bolívar, 1911)
- Hind tibia less wide apically; female tegmina narrower; posterior margin of the subgenital plate more sharply triangular; female cerci conical, slightly shorter or reaching the supra-anal plate (Fig. 8A, B); body multicolored with a pale green-yellow dominance (or dirty olive yellow by Ramme) (Fig. 16); male unknown *Digentia karnyi* Ramme, 1929

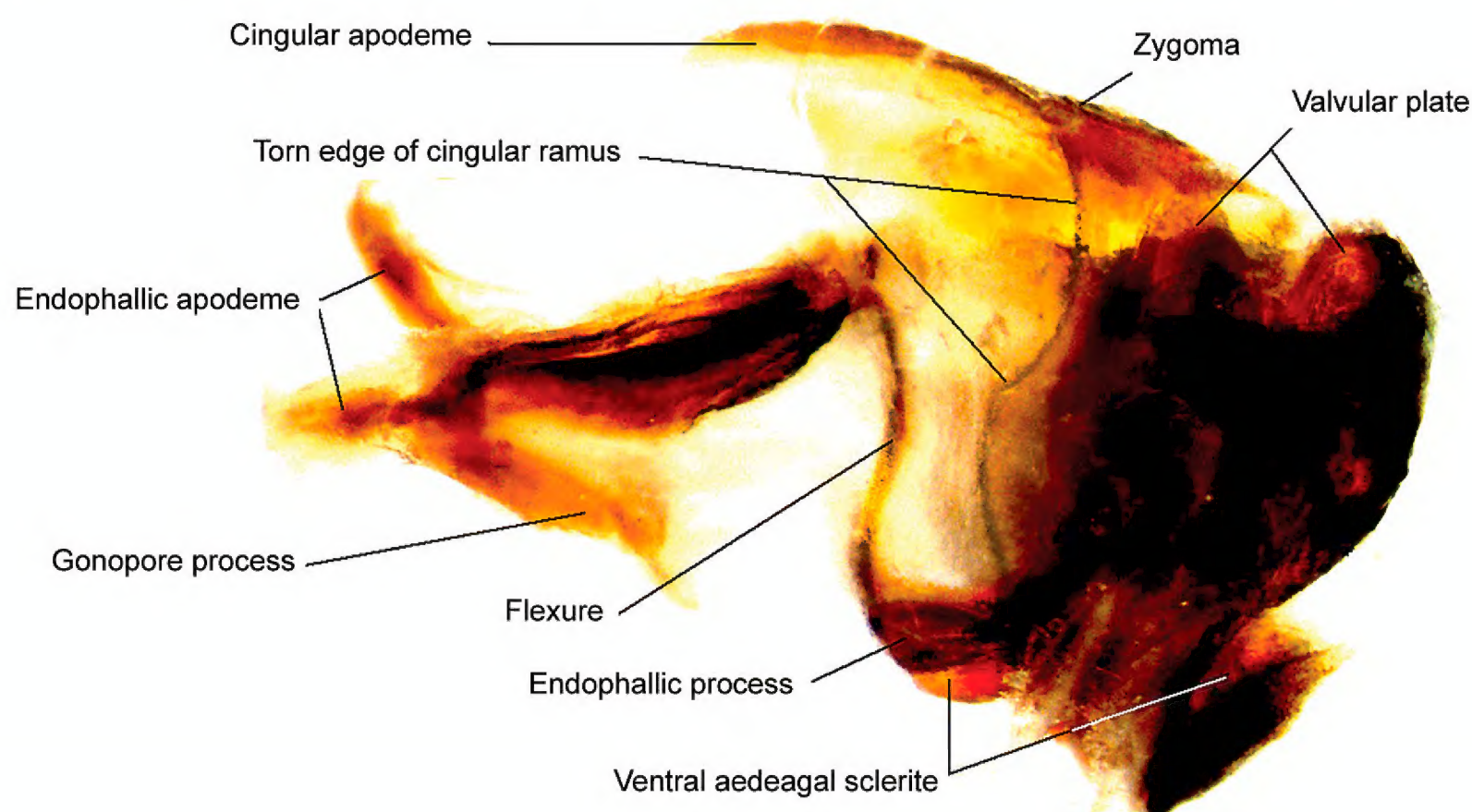


Fig. 20. Photo of the phallus of *Digentia viridissima* sp. nov. showing flexure. The ectophallic membrane, epiphallus, and ventrolateral sclerite have been removed. The posterior edge of the cingular ramus has been torn off, revealing the endophallic flexure and its endophallic process abutting the ventral aedeagal sclerite. Scale bar: 1 mm.

Table 4. Plant species composition in the habitat of *Digentia fasciata* and *Digentia viridissima* sp. nov. at Ngutadjap in Cameroon. 5, coverage >75% of the referenced surface; 4, coverage between 75–50%; 3, coverage between 50–25%; 2, coverage between 25–5%; 1, coverage < 5%; +, few individuals, very low coverage.

Family	Genus	Species	Type of plant	Index of Abundance
Apocynaceae	<i>Alstonia</i>	<i>Alstonia boonei</i>	Tree	1
	<i>Tabernaemontana</i>	<i>Tabernaemontana brachyantha</i>	Shrub	1
	<i>Voacanga</i>	<i>Voacanga</i> sp.	Shrub	+
Araceae	<i>Nephtytis</i>	<i>Nephtytis afzelii</i>	Herb	+
	<i>Rhektophyllum</i>	<i>Rhektophyllum camerounense</i>	Herb	+
	<i>Epipremnum</i>	<i>Epipremnum pinnatum</i>	Herb	+
Dennstaedtiaceae	<i>Lonchitis</i>	<i>Lonchitis</i> sp.	Fern	+
	<i>Pteridium</i>	<i>Pteridium aquilinum</i>	Fern	5
	<i>Blotiella</i>	<i>Blotiella currorii</i>	Fern	2
Marantaceae	<i>Marantochloa</i>	<i>Marantochloa conferta</i>	Herb	2
	<i>Afrocalanthea</i>	<i>Afrocalanthea rhizantha</i>	Herb	2
	<i>Hypselodelphys</i>	<i>Hypselodelphys</i> sp.	Herb	2
Menispermaceae	<i>Jateorhiza</i>	<i>Jateorhiza macrantha</i>	Liana	+
	<i>Triclisia</i>	<i>Triclisia dictyophylla</i>	Liana	+
Arecaceae	<i>Eremospatha</i>	<i>Eremospatha macrocarpa</i>	Shrub	2
	<i>Raphia</i>	<i>Raphia farinifera</i>	Shrub	2
Aspleniaceae	<i>Asplenium</i>	<i>Asplenium currori</i>	Fern	+
		<i>Asplenium</i> sp.	Fern	+
Leeaceae	<i>Leea</i>	<i>Leea guineensis</i>	Shrub	3
Euphorbiaceae	<i>Alchornea</i>	<i>Alchornea floribunda</i>	Shrub	1
Olacaceae	<i>Strombosia</i>	<i>Strombosia pustulata</i>	Tree	1
Commelinaceae	<i>Palisota</i>	<i>Palisota hirsuta</i>	Herb	3
Phyllanthaceae	<i>Phyllanthus</i>	<i>Phyllanthus amarus</i>	Herb	+
Thymeleaceae	<i>Dicranolepis</i>	<i>Dicranolepis buchholzii</i>	Fern	1
Fabaceae-Caesalpinioideae	<i>Pentaclethra</i>	<i>Pentaclethra macrophylla</i>	Tree	+
Zingiberaceae	<i>Aframomum</i>	<i>Aframomum augustifolium</i>	Herb	+
Davalliaceae	<i>Nephrolepis</i>	<i>Nephrolepis biserrata</i>	Fern	+
Lomariopsidaceae	<i>Lomariopsis</i>	<i>Lomariopsis hederacea</i>	Fern	+
Annonaceae	<i>Artabotrys</i>	<i>Artabotrys insignis</i> var. <i>batesii</i>	Shrub	+
Sterculiaceae	<i>Leptonychia</i>	<i>Leptonychia</i> sp.	Tree	+
Balsaminaceae	<i>Impatiens</i>	<i>Impatiens niamniamensis</i>	Herb	+
Fabaceae-Mimosoideae	<i>Calpocalix</i>	<i>Calpocalix brevibracteatus</i>	Tree	+
Dichapetalaceae	<i>Dichapetalum</i>	<i>Dichapetalum umbellatum</i>	Liana	+
Rubiaceae	<i>Bertiera</i>	<i>Bertiera elabensis</i>	Shrub	+
Meliaceae	<i>Guarea</i>	<i>Guarea glomerulata</i>	Shrub	+
Cecropiaceae	<i>Musanga</i>	<i>Musanga cecropioides</i>	Shrub	+

Discussion

The known species of *Digentia* are not morphologically very homogenous, differing considerably in coloration, size of the body, length of tegmina, and width of the hind tibia. Our examination shows that the species of the genus can be separated into two subgroups based on external morphology. The subgroup of *Digentia punctatissima*, *Digentia fasciata*, and *Digentia viridissima* have tegmina extremely reduced, metazona reduced and notched medially in the posterior edge, hind tibia less or not at all expanded apically, and the body with black longitudinal bands that extend dorso-laterally from vertex in pronotum, mesothorax, metathorax, and up to the fifth abdominal segment, or reaching the last abdominal segment. *Digentia rufogeniculata* and *Digentia karnyi* are in the second subgroup, with longer oval tegmina, hind tibia expanded apically and relatively massive, body without black longitudinal bands. This division into two groups corresponds to the original generic divisions of *Digentia* Stål, 1878 and *Genditia* Bolívar, 1911. However, the male and female genitalia of the different examined species are not obviously sufficiently different to separate the species of *Digentia* into two different genera. The phallic complexes of all *Digentia* spp. are of small to medium size; epiphallus incompletely divided or undivided, without ancorae; cingular apodemes

in ectophallus are slender, elongated, with rounded apices, rami rounded not fused ventrally; gonopore process is elongated with slightly rounded or pointed apex; female ovipositor valves are long, slender, smooth, or evenly and weakly serrate in apical half. Logically, in his review of the subfamily, Hollis (1975) transferred *Genditia rufogeniculata* Bolívar, 1911 to the genus *Digentia*.

Our description of *Digentia rufogeniculata* and *Digentia karnyi* shows few differences in the external morphology except for the length/size of the female cerci and body coloration. Hollis (1975) cited a different degree of size and shape in the tegmina and subgenital plate in the females of the two species to refute Dirsh's synonymy (1952: 268). Ramme (1929) cited the different degree of hind tibia width in the two species as a criterion, but this structure is now missing from the holotype of *D. karnyi* and presumed lost. Moreover, Ramme's description of *D. karnyi* was based on a single female specimen, and the type locality is close to the *D. rufogeniculata* type localities in the same country (see Fig. 1). In an attempt to clarify the synonymy, we were able to examine and describe the male genitalia of *D. rufogeniculata* in this study but not that of *D. karnyi*. The male topotype of *D. karnyi* needs to be collected at Tolo in RD Congo for this purpose. It is obvious that the available taxonomic material is too meager to allow significant comparisons to be made; this is

unfortunately a common situation among African forest grasshoppers. The question of the generic identities of *Digentia* and *Genditia* needs to be reconsidered after extensive new collections have been made and both sexes of all species are known.

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